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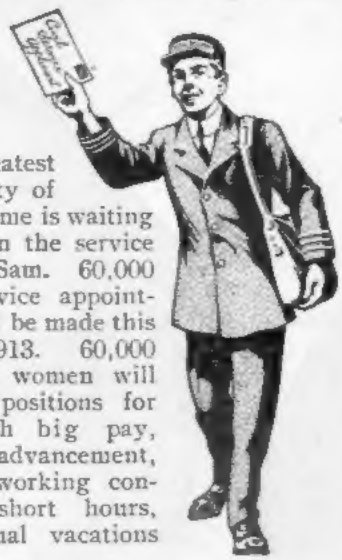

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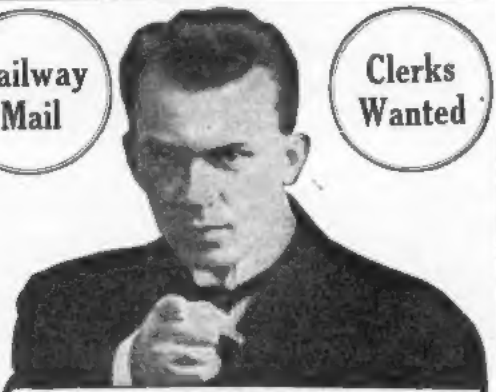

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RAILROAD MAN'S MAGAZINE

Vol. XXI. JUNE, 1913. No. 1.

THE DARING "BRIDGE-FLY."

STORIES OF THE BUILDERS WHO HAVE NO NERVES.

BY FREDERICK A. TALBOT.

YOU have seen him—a brawny specimen of thew and muscle, with no more nerves than a statue, no more giddiness than a caribou bug—swinging the rivet-hammer on the extremity of a truss a few hundred feet in the air, or astride a girder.

The "bridge-fly" is a strange type—devil-may-care, though of steady eye; happy-go-lucky, though as sure of foot as a chamois, and talking with a jarring rattle, as if the *rat-a-tat* of the pneumatic or hand-swung hammer had become a part of himself. He has a grin which sends the marrow of your back-bone down like a thermometer plunged into ice-water. He cherishes strange ideas of a joke.

I met the bridge-fly face to

THE BATTLE RIVER BRIDGE IN COURSE OF CONSTRUCTION ON THE GRAND TRUNK PACIFIC'S EXTENSION IN ALBERTA, CANADA. IT IS 185 FEET HIGH AND 1¼ MILES LONG. ONE THOUSAND "BRIDGE-FLIES" BUILT IT IN A MONTH

face for the first time at the end of a black truss thrusting its symmetrical black nose farther and farther across the MacLeod River. The Grand Trunk Pacific was held up by this waterway, and the track-layer was impatient to cross and to settle down to its stride once more. The bridge-flies had been told to let themselves go. They were doing so in grim truth. Seven days a week, from morning to night, they were clinching the ribs of steel.

I had crawled out somewhat gingerly from the lofty bank, stumbling and slipping among the pieces of metal forming the unlaid floor. Presently the floor came to an end. Only the stringers stretched forth to the end of the truss and the water rolled along merrily a hundred feet below. My objective was twenty feet beyond the flooring, but, being a tenderfoot, I looked at the murky water and the drop if I slipped. I concluded mentally that I was no bridge fly.

"Hello, pard! Got the shivers?"

The voice grated more than the ring of the grinding steel. A gaunt form shambled by me, and then, clinging limpetlike to the vertical members of the panel, it wended its way toward the front.

"Come on, pard! Hold tight! And don't look down, or else you'll soon get thar."

Just a Drop of Sixty Feet.

I gripped the members and, following the advice, crawled out carefully. As I reached the end of the truss and was about to peer over, a head popped up. The derrick-arm was leaning over and was swinging outward and upward a twenty-foot length of steel on which two other gaunt forms sat and joked.

A few monosyllabic words were rasped, the steel stopped, a smart drive or two of the hammers clinched the member in position, and the dangling derrick-rope swung away with the two men hanging on the stirruplike hook.

My companion, dangling his legs over the end of the stringer and waiting for another piece to come up, chewed his quid viciously.

"How's var head, pard! Got spinnin' yet? You're sure to get it, and if yar do, yar know"—pointing significantly downward—"make sure yar take a clean header."

"I went down that way once," he added quickly. "'Twas one of my first jobs. I was comin' out gently and carefully along the girder when, phst! I found I was treadin' on air. Head whizzed like a spinnin' top and away went my feet. 'Twasn't a very big drop, only sixty feet, I guess, and I cut the water like a jumpin' salmon. But it cleared my head and I've never had a touch of giddiness since.

"Nerves!"

"Nerves! Well, I guess it's better to leave them in th' caboose when you're on this lay, but we get the shivers now and again. I got a fair fright when puttin' up a bridge out East. It was not over a river, but somethin' worse, a darned crowded street with the trolley-cars and what not running about like ants below.

"I was waiting for a stringer to come down, and th' boss had yelled, 'Lower away!' The derrick stiff did lower away, an' a blamed sight too quick. The beam hit the truss with a bang. I was standin' up, ready to lend a hand, and the darned old girder I was on twanged like a banjo string.

"Before you could wink your eye I had been jerked off that girder. I thought it was all up as I dropped, but I shot out my hands and just caught the edge of the girder with my fingers.

"The wrench nearly pulled my arms out of their sockets, and I gave a glance downward to see what kind of drop I'd got if I had to leave go, and whether I should hit a trolley-car or plump into a garbage-wagon. It was about sixty feet straight down, and I guessed I would hit an electric-light standard standing in the middle of the road. I saw that.

"I felt my fingers slipping, though I clenched my nails. I had just shut my eyes for the drop, for I could not hold out a minute longer, and just as I was about to let go a cheery voice sang out, 'Hold on, Joe!'

"I heard feet shufflin' along the stringer, felt my pal kneel down, and he gripped one arm.

"'Now then, man! Whooh! Just a

THE HIGHEST RAILROAD BRIDGE IN THE WORLD. IT IS KNOWN AS THE EADES VIADUCT AND SPANS THE SIOULE RIVER IN THE FRENCH PROVINCE OF PUY DE DOME. THE TRAIN CROSSES THE WATER AT A HEIGHT OF 434½ FEET. THE COMPLETED TOWER SHOWN IN THE PHOTOGRAPH IS 304 FEET HIGH

bit more! Whooh! Now again! Whooh!'

"I got my head above the girder, and then, with the strong arms of my chum, for I was about done in, I was pulled to the perch. We sat there for a moment or two looking at one another, I as white as a ghost and three parts scared, while my pal started to joke just to liven me up a bit. I didn't walk back along that girder. I just crawled along until I got something to catch hold of and then pulled myself into th' panel and took a breather!"

Saved by an Indian.

Some say that bridge-flies have no nerves, yet now and again they lose their heads and have a bad attack of fright One fellow was as level, cool-headed, and as steady as you could find anywhere. "Mountain Goat Jim" one or two had called him, for he crawled about the dizzy steel work and appeared to be as surefooted as the animal of his nickname

He was on the Quebec bridge that tumbled into the river. Jim had a fancy climbing to the highest parts of the work. He said that he felt able to breathe up there—it was too suffocating down on the track deck. But his pals smiled and shook their heads with the irreligious opinion that Jim got up there "because, having no hope of the hereafter, he was anxious to get as near heaven as he could while alive."

Jim had one or two Algonquin Indians on his stage who were just about as clear-headed as he was. One day he was standing out on the end of the top girder when suddenly he dropped his hammer, straightened himself, and stared into the water as if scared to death. He stood as rigid as the metal members about him.

One or two of the boys below yelled up at him to "get a move on," but it was of no use. He simply looked down at the St. Lawrence with a strange fascination. One of the Indians saw what was the matter and shinned stealthily along the projecting piece of steel. When he had reached his boss he hitched his legs to the girder and quietly took Jim's hand.

Disaster seemed imminent. The Algonquin caught Jim's wrist like a vise and then quietly and steadily started shinning backward, dragging, rather than leading Jim down the member. The Algonquin fastened his eyes on his boss, as if to divine a rash movement. Presently the back of the Indian touched the upright from which he knew a derrick-rope was hanging.

Feeling behind him with his empty hand, he grasped the rope, and in a flash had Jim down and the rope hitched round his waist. The action roused Jim and he started to fight like a maniac. He was no match for the Algonquin. He was strapped up, and then the derrick whisked Jim, kicking like a hooked crab, back to the shore span, where he was lowered safely to the track deck.

Once his feet struck the floor Jim came to his senses. He shuddered, the blood returned to his face, and he recovered himself. The Indian came down, but his few gutturals were cut short by Jim clutching his hand and shaking it like an ax-handle.

"That was a tight go! Gee! I had the shivers rare! But I guess you're top-notch, though, Red."

The next morning Jim was back on his job as if nothing had happened.

McCann Bounced to Safety.

The Canadian Pacific was throwing a bridge across one of Ontario's wildly rushing rivers for a spur line. It was not a big bridge as bridges go nowadays -a through truss span of about two hundred feet and some seventy feet above the water. The riveting gang was hitting it right merrily, as they were up against a time limit.

Suddenly there was a yell from McCann, one of the men. His hammer flew upward as he missed his footing, and, as there was nothing to grab, he made a straight dive for the water. His chums turned round at the cry, saw him turn a somersault in the air, and then there was a splash. They peered intently into the water, but the swiftly running river gave no sign of the man.

"Guess Mac's handed in his checks this time for sure," growled the riveting boss

Nothing more was said. The hot rivets came singing through the air from

the forge, were caught in the bucket, gripped with the tongs, slipped into the holes, and then the hammers came down

were working harder than ever. The gang was now one short and time was against them

THE HIGHEST ARTERY OF TRAFFIC IN EUROPE, A SECTION OF THE WONDERFUL STELVIO RAILROAD IN SWITZERLAND, WHICH CROSSES THE TYROL AT AN ALTITUDE OF 9,042 FEET

Photograph by Henry Ruschin, New York

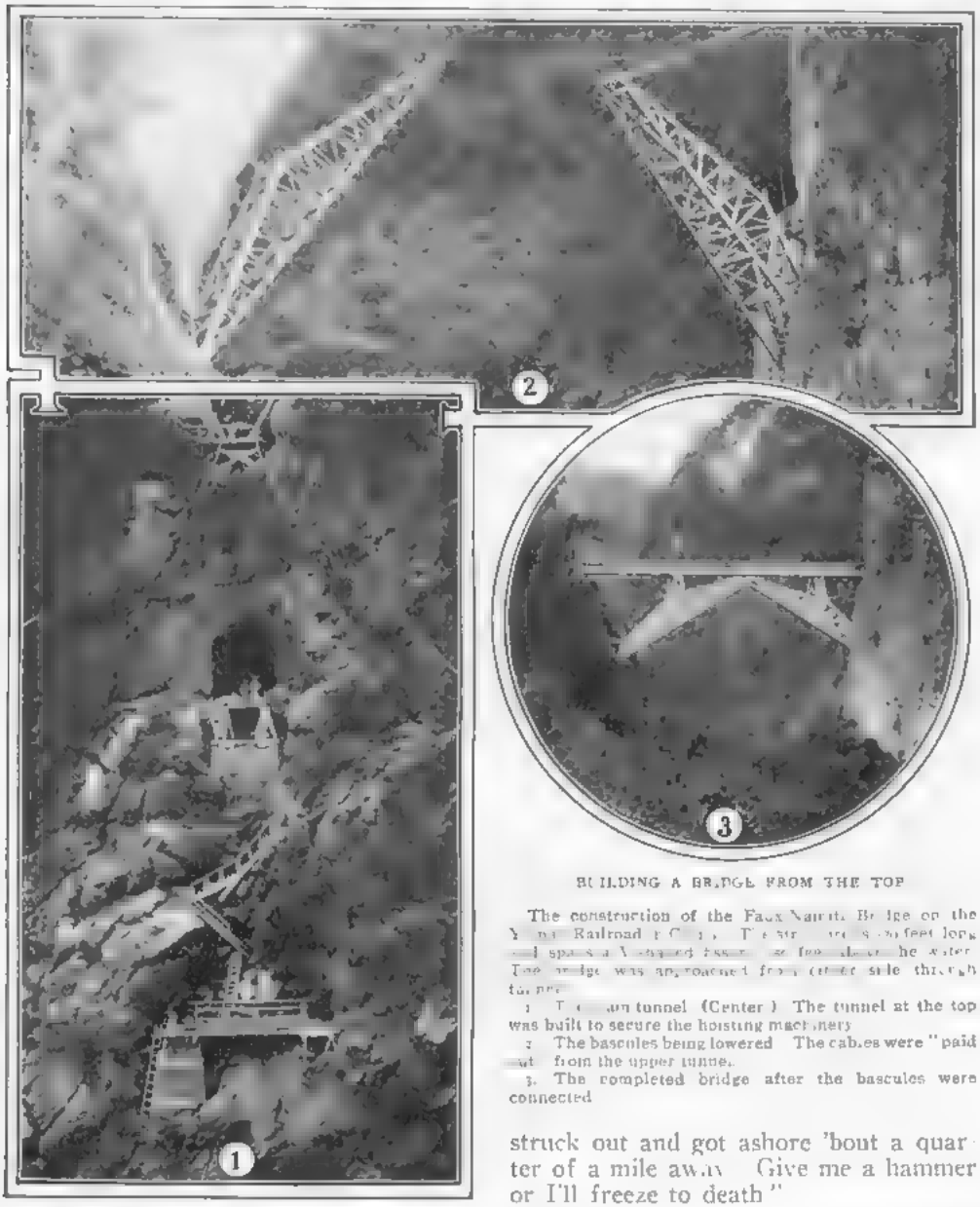
upon their heads with resounding blows. Yet the mishap had taught its lesson. The rest of the gang mentally determined to be more careful. The riveters

"Say, you jes' threw up a hammer!"

In terror every man stopped at the sound of the rattling voice from above, for they knew its tone only too well

They looked up and saw a dripping figure, his hair matted and clinging to his face, which was as white as a sheet, save for one or two red trickling stains.

ed her this time. Went down like a stone, cut the water like a knife, banged m' head against th' bottom, came up again 'bout a hundred yards below, then



BUILDING A BRIDGE FROM THE TOP

The construction of the Fa[illegible] Bridge on the [illegible] Railroad [illegible]. The [illegible] feet long [illegible] spans a [illegible] feet above the water. The bridge was approached from either side through tunnels.

1. The [illegible] tunnel (Center). The tunnel at the top was built to secure the hoisting machinery.
2. The bascules being lowered. The cables were "paid out" from the upper tunnel.
3. The completed bridge after the bascules were connected.

"Wh-what! M-M-Mac, is it you?"

"Yep! Who do you think it is?"

The riveters looked at one another and finally down at the water.

"You thought she'd fixed me, did you? Well, she just ain't. I fair cheat-

struck out and got ashore 'bout a quarter of a mile away. Give me a hammer or I'll freeze to death."

But the bridge-fly does not emerge safely every time. The bridge counts her victims, and down on the post at the end you'll generally find a daub or two, each of which can tell a story. Niagara's milky, foaming waters have claimed many as the webs of steel have

been woven from bank to bank. Familiarity breeds contempt, they say, and although the boss is continually dinning it into your ears to be careful, somehow or other they take chances. It was that way on the cantilever across the gorge.

On this bridge the chief was as careful a fly as you'll find in a year's march. He took no chances under any circumstances. And yet—he was standing out on the end of a deck-girder waiting for the derrick to lower a cross member. It was coming down through the air when something went wrong. The sling slipped a few inches and the beam gave an ugly tilt. All the flies thought it was going to get adrift, and they scampered as well as they could.

The boss, waving his hand as a signal to lower, saw it coming, and in a natural manner stepped back. He forgot for the moment that he was on the outer tip of the girder, and there was nothing behind him except the air. He turned over and over in the air and then hit the scurrying water. Possibly a body was thrown up on a bank farther east and consigned to a grave as an unknown found drowned.

To-day more attention is paid to the provision of facilities to prevent such accidents. When the British engineers were throwing the single steel-arch across the Zambezi River just below the Victoria Falls, it was necessary to protect the black labor as much as possible. So a large net was slung beneath the working areas to catch tools, bridge-flies, and negroes who might fall.

Why Hans Fled.

Similarly, when an American engineer supervised the throwing of a cantilever across an Indian gulch, he stretched a net below for the same purpose. In building the lofty Lethbridge viaduct the riveters were imprisoned in a cage which was drawn up and down to the working level by the traveler above. During the pointing of the masonry on the Fades viaduct the French masons were accommodated on a platform enclosed in wire.

Now and again a humorous incident relieved the monotony of driving rivets and setting steel. A double-deck bridge was being thrown across a Mexican river and one of the forges for heating the rivets on the bottom deck was in charge of a Dutchman, "Fat Hans" they called him. Hans was a master at heating rivets and, although he had to feed some of the hungriest of riveters, he never lagged.

A Mexican peon came trudging along with a basket of tools. As he passed the forge there was a yell from the deck above and a rivet-hammer clattered down. The peon swung to one side, blundered into Hans and, catching the Dutchman an unlucky blow in the ribs, bowled him over.

Kicked a Hot Rivet.

The language was very bad. The Mexican, not understanding the vernacular, grinned broadly, and Hans, lying on his back and mad with rage, slung a rivet at the offender's head. The Mexican ducked, tripped over a bit of steel, upset the forge, scattering the embers on all sides and shooting the contents of his basket among the débris. Cinders and tools caught the prostrate Hans.

Spurred by the heat of the scattered fire, he leaped to his feet, spluttering with fury.

"You teffel! I—"

The riveters paused. They were acknowledged masters of vituperation, but they were eclipsed completely by the torrent issuing from the infuriated Dutchman. They roared uproariously at his struggle among the cinders, but were silenced by his invectives. Hans consigned every mother's son to lurid perdition and then looked round for the peon. He had fled.

It required an hour to compose the rivet-heater. He declined to be comforted.

"Vat you laff at me ven dat Mexeecan me insult."

Then he launched into a diatribe in his gibberish which no one could fathom. The riveters had to replace his forge and start his fire before he would heat another rivet. In the caboose that night the mirth was long and uproarious as vivid pictures were painted of Fat Hans sprawling among the cinders.

If there is one thing more than another which the bridge fly fears it is the

falling of a tool, rivet, or other small material. A rivet may seem an insignificant four-ounce lump of metal when held in the hand, but when it falls twenty, thirty, or more feet, it accumulates considerable force

I have seen men receive ugly gashes from such a missile, even when it has dropped only ten feet or so. If it strikes you fairly on the head the chances are a thousand to one that it will cause serious concussion of the brain

An engineer who had been supervising the erection of some bridges in Africa related a story round the campfire one night of a clumsy riveter on the top girder of a through truss bridge.

He was standing on the slung plank in the usual manner, and almost beneath him was the blacksmith with a negro boy blowing the bellows. A rivet had been heated and tossed up, but being a misfit, had been withdrawn and dropped on the plank instead of being thrown overboard. The hammers were swinging, when suddenly the blacksmith shouted and dived to one side. He saw the clumsy riveter above kick the rivet out into space.

There was a resounding crack and a limp bounce. The falling rivet had hit the bellows boy squarely on the head. The blacksmith darted forward, thinking the youngster had been laid out, but he was met with a broad grin. He explained later, that if it had been a white man it would have meant a funeral.

It is just sheer hard luck that precipitates a fatal disaster or a nasty injury on a bridge-building job, but life has become more valuable than it used to be. If an engineer in Europe loses a life it is regarded as a serious matter. There is an inquest and, ninety-nine times in a hundred, costly litigation follows, with a heavy award if the accident arises through no fault of the man.

In countries where foreign labor must be employed, an accident is likely to be expensive. A man may come from the decrepit villages of Poland, the ditches of Hungary, or the slums of Russia, but his consul is vigilant. The man's relatives soon hear about an accident, send a heavy bill for damages, and the contractor invariably settles the account after haggling a bit to bring about a reduction in the claim.

THE SILENT VOICE.

BY "THIRD TRICK."

IT was only an old brass lever,
It didn't amount to much,
But in years of forgotten service,
It had known the skilful touch

Of a thousand slender fingers
That swiftly moved the key
With clamorous dots and dashes—
The tongue of electricity

In the days of a nation's warring,
In times of political strife,
Its voice with metallic precision
Told of the nation's life.

A President passed from the White House,
A liner was lost at sea—
With never a show of emotion
From the telegraph sounder or key.

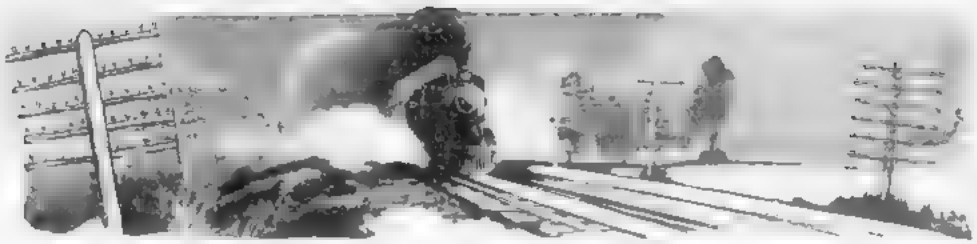
The tariff went down like a rocket,
A smuggler was caught on the line,
The limited ditched in the suburbs—
But the sounder gave never a sign

That the piping hot news it was spreading
Was aught but the grind of a day;
Then it quoted, impartial and glibly,
The prices of oats, corn, and hay.

In the days of its bright, shining splendor
Its life was a strenuous span;
The world was its field of endeavor,
Its song, the emotions of man

Its work was the work of a stoic;
Like a stoic's, its work was well done,
Till a crack in its voice marred its clearness
And told of a race that was run

I found it on top of the scrap-heap,
With affection I've laid it away,
It was only an old brassy lever—
But it spread joy and woe in its day



The Code of Greavey.

BY ARTHUR SOMERS ROCHE.

He Wouldn't Go Back on the Road Even When the Doors of Jail Opened Wide for Him.

A NOVELETTE COMPLETE IN THIS ISSUE.

CHAPTER I.

The Man Who Was Spiked.

GREAVEY, superintendent of motive-power, hurled the empty oil-can with a viciousness that made it rebound a score of feet from the heavy drivers of the 106

"The death of a hundred people—that's what it means!" he snapped.

Bennett thrust his head out of the cab-window.

"What's eating you, Gravy?" he asked, mildly.

The nickname but made the super more angry.

"It's the flames of a wreck that'll be eating you, Bennett, and a hundred passengers that count a whole lot more than you. They can bring damage suits—them or their heirs—and I pray Heaven they do! Look!"

He picked up the discarded oil-can and pointed to its label

"The cheapest grade on the market!" he snapped. "The cheapest grade!"

Bennett reflectively bit off the end of a plug.

"Cheap oil don't make wrecks," he said.

"Not that alone," said the super. "But when economy strikes a road's heads so hard that they pare every expense to the bone; when they cut down inspection to save a few pitiful salaries; when they plug ties till they're rotten, and when even the oil for the triple valves—"

Suddenly the super remembered that he was talking to an engineer; that he was venting a grievance that should be aired only to a superior, not to one, who, though he drew the Limited Mail, was after all, lower in the scale of railroad officialdom than the superintendent of motive power.

"What are you waitin' for, anyway?" he snapped. "Ain't they signalin' you to pull out of the yard?"

Bennett cocked an eye at the flagman fifty yards up the track.

"Right y'are, old roast-beef and gravy," he said impertinently. His right hand reached out, gripped a lever, and 106, pride of the B. and I., slid gently out of the yard.

Greavey looked after the engine until it had disappeared. Then, his day's

work done, he started for the shops to remove his overalls. He had gone a half dozen steps when a voice, the whining voice that always accompanies the smirk of subservience, stopped him.

"Oh, Mr. Greavey, won't you gimme that can, please?"

Greavey looked with unhidden scorn at the speaker.

"What d'ye want with it?" he snapped.

"It's empty, I thought," said the man "I was just wantin' to throw it away"

"Awful neat you're gettin', ain't you, Durkin?" scoffed the super. "Or is there some junkman helpin' out your envelope?"

Durkin flushed, but his little eyes gleamed balefully. "Who could I sell old cans to?" he protested

Greavey laughed shortly. "Trust you for findin' a place to sell anything, Durkin even a friend if the chance arose."

Durkin, car inspector, showed his teeth for a fraction of a second. For a moment wild anger and hate mastered cowardice.

"Ain't she better off?" he asked "Ain't she happier — with him" — and he jerked a thumb in the direction taken by 106—"than she'd ever been with—some one else?" he finished weakly

Greavey took a step toward the inspector. "Some day, me lad," he said thickly, "you'll say too much and there'll not be enough left of you after that time to say *anythin'!*"

Durkin flinched before the hard eyes of Greavey. He took a step backward from the knotted fist of the super. But Greavey's temper vanished as quickly as it had come. He tossed the empty oil can contemptuously at Durkin and turned squarely on his heel. Durkin looked after his broad shoulders

"You spiked me, blast you!" he whispered. "Got my engine taken from me, and—you think I stopped at takin' your girl *my* girl—from you, and givin' her to Bennett! You think I stopped there—"

He straightened to his full height, and it was suddenly evident that he was almost as big a man as Greavey should he carry himself erect. He made a motion as if he intended attacking the super. Then the light of anger died from his eyes, to be replaced by sullen cunning. He fumbled with the empty oil-can.

"And Greavey said it," he mumbled. "Greavey said the oil and the inspections and the plugged ties would some day—"

Once more he straightened to his full height; his fist doubled into a bony knot and he shook it at the roundhouse, at the engine standing on the turn-table, at the lines of empty cars, and finally, anathema on his tongue, at the building that housed the despatchers and the division manager and his staff

"You took my engine, damn you!" he muttered. "You took my engine, reduced my pay, and—"

Then he shambled slowly after Greavey to the shops, taking care, however, to delay his progress so the super was gone when he arrived there.

The empty oil-can he wrapped in an old newspaper and carried away with him. In a shabby room in an equally shabby lodging-house he unwrapped his bundle and placed the can carefully on the shelf of a closet. Then he pulled out a note-book and began carefully to write down the exact words he had overheard Greavey using to Bennett.

When he had finished he smiled cunningly, patted the note-book lovingly and put it away. It was a bulky little book and its ruled pages contained the record of many idle conversations and the result of many months of observation.

Strangely enough, its first recorded item bore the date of October 3. It had happened that on October 2 Durkin had been reduced from his engine to car inspector. The cause was given as "drunkenness on duty," and Greavey had reported him! That it was Greavey who had pleaded with the division manager to be allowed to make a place for the deposed engineer on his own staff never weighed in the balance of Durkin's hatred for the superintendent of motive power.

"He had me reduced and Molly heard why," muttered Durkin, as he turned out the light in his room. "I busted his plate with her — and I almost queered Bennett with her. I'd have done it, too, if Greavey hadn't shown her she was makin' a mistake. Thought he'd make himself strong, boostin' his rival, eh? And thinks he's squared himself with

me by givin' me the job I got! Him and his sneers—because he's bigger!"

CHAPTER II.

A Whistle's Wild Warning.

FIVE sharp, successive, staccato sounds! And ere the fifth had ceased to echo from the hills, half-dressed men were on the streets, climbing into clothing as they ran

Numb and half-blind with sleep, they stumbled and staggered, but they *ran!*

It was the call for the wrecking-crew, and it is answered as loyally and as promptly as the bugle that orders a battle charge or the rocket from the beleaguered ship that flashes for aid.

Greavey, tossing wakefully upon his bed, heard the first of the whistles Somehow the evil tongue of Durkin had stabbed the sore spot of memory and Greavey had been unable to sleep.

It was not his duty to join the wrecking crew. He had his own work to attend to and, short handed as he was, his job was none to attack without the preliminary of sleep. But it seemed, to his senses, sharpened by lack of sleep, that there was something more than ordinarily menacing in the wrecking crew summons to-night

He got up, lighted a lamp and looked at his watch.

Two o'clock! The Limited Mail, with Bennett in the cab, was due at Mosston at 2.30. She should have passed Mountain Turn, the most dangerous point on the road, at 1.30. Had anything happened to Bennett's train?

Impossible! The Limited Mail was the best train on the system and Jack Bennett was the most careful driver. However, Greavey arose and put on his clothes, as rapidly as if he were the humblest worker in the wrecking crew. He slipped gently from his room, downstairs and into the street and hurried for the yards.

Half a block down the street a feminine voice hailed him. In a doorway set back a dozen yards from the street he saw a dim white shape.

"Please, mister," said a voice.

"What is it?" he called out.

"Oh, is that Mr. Greavey? This is —Molly!"

"I know," he answered. "What are you doing up at this time of night? You'll catch your death of cold, and —get back to your bed or I'll tell Jack on you."

"Is it Jack's train?" she asked.

"What on earth makes you think that?" he inquired gruffly.

"Is it?" she insisted

Heavy, hurrying steps sounded on the sidewalk. A man came out of the gloom and stopped at sight of Greavey. He grabbed the super by the shoulder and stared into his face. Greavey recognized him as Tyler, rigger foreman, head of the wrecking-crew.

"Greavey," gasped the rigger foreman, "it's the mail and we haven't half enough men—"

Molly Bennett from the doorway shrilled the number. "106!"

Then they saw her dim shape slip to the little piazza floor. Greavey exclaimed:

"Look what you've done, you fool!" he snapped.

Tyler stared from Greavey to the white huddle on the porch. Then he looked back at the super.

"Her mother lives with them, don't she?" he asked. "Rouse her up! Then grab all the men you can, Greavey. The Limited went over rounding Mountain Turn and—my God! it's awful! Two hundred passengers—sleepers, and—oh it's awful!" he cried.

"Buck up, Tyler," snapped Greavey. "You can't lose your nerve, you know."

"I'm not," said the rigger foreman; "but—the men are slow in answering! I'm digging them out of bed. You get down to the yards and send out messengers for extra help! Get a hospital train ready!"

Greavey gave the rigger foreman a shove. "Get busy," he snapped. "I'll take care of my end."

He leaped to the veranda and pounded on the door. A frightened voice called to him.

"It's Greavey, Mrs. Collins," he cried "Your daughter's fainted. She come down to find out about the wreck and heard Tyler say that it was the Limited Mail. Now, don't *you* go to pieces," he ordered. "Probably Jack isn't hurt. Anyway, look after Molly!"

He lifted the slim figure while he was

speaking and bore it into the house, laying it gently upon a couch in the tiny parlor.

"She's just fainted," he said. "Take care of her."

Then he bounded out of the house, and to the yards. Men were streaming into the shops. It had taken less than five minutes to inform Mosston that this was not an ordinary wreck, that the lives of two hundred passengers were in jeopardy or had been already lost.

And the railroad men had not waited for orders. They needed not to be told that the wrecking crew could not handle this affair alone. Doctors, nurses, willing hands and brave hearts were wanted, and every man who learned the news responded to the call to his humanity.

Greavey gave swift orders. At that moment he was the ranking authority present, and wisely did he exercise his power.

He ordered three Pullmans as a hospital train, commanded the despatchers to clear the right-of-way for the wrecking train and the hospital corps and then, anxious to reach the scene of horror and be of what service he could, he swung himself aboard the wrecking train.

It was a ride of torment. Notwithstanding that the engineer was daring to the point of recklessness, that confident of a clear track, he opened his throttle to its widest, the anxious, low-voiced men among whom Greavey sat found it hard to believe that they were making time.

"Why don't he show some speed?" snapped Tyler. "The regular running time is two and a half hours, but to-night —we ought to make it in half an hour less—and we ain't."

"Just think of those passengers," said one of the men.

Greavey turnd on him with a snarl. "Quit 'thinkin' of them," he ordered. "You'll see enough soon."

Little by little conversation died away. And as the gloom of night passed and dawn cast faint rays of light, familiar landmarks denoted that the Mountain Turn was coming nearer.

Men ceased all speech and began to look after their equipment—their hydraulic jacks, their coils of rope, their fire extinguishers. Little by little hard, firm lines began to show from mouths to nostrils; jaw muscles tightened, throwing into hard relief the sweep from ear to chin.

The wrecking crew was getting ready to go into action. There came a short blast from the whistle and the engine slowed down. A minute later, shaken by the wild ride, but firm of step and swift of thought, the men, led by Tyler, who was but a scant fraction of a second ahead of Greavey, leaped to the ground and began racing up to the long, blazing mess that strewed the track ahead of them.

CHAPTER III.

Terrors of the Night.

A BLUE UNIFORMED man, his face ghastly save where blood smeared its awed features, met them at the overturned engine.

"The president — MacAllister!" he cried. "He's in the last car—pinned under! Get him out!"

"Ain't there women under the wreck?" asked Tyler.

"Sure, but—"

"The president waits," said the rigger foreman.

He took in the scene swiftly and gave his orders. Two cars, the last of the crowded sleepers, had been overturned and were burning. The engine, too, had gone over, but the four cars between were upright, although they had left the tracks. They, too, were burning.

The couplings that connected them with the engine and the overturned cars, behind, had weakened fortunately under the sudden strain.

The passengers of these cars were safe. They were huddled in screaming, wailing groups along the embankment of the road.

Here and there—too often even for a strong man to look on them unmoved —were blanketed shapes. The saved passengers had shown courage, as had those of the train crew left alive. The dead—as many as could be reached—had been dragged from the burning wreck. Tyler took one glance. Then he turned to his men.

"Four of you do what you can to the engine. The rest of you follow me!"

At the head of his men he dashed

down the tracks and from the huddled onlookers came cheers of hope and gratitude. Greavey started after Tyler. He was no wrecker, but he felt in his muscles the strength of ten men. The blood-smeared conductor grabbed him.

"The engineer and his fireman are in there," he said, pointing to the mass of iron that lay upon its side. They were cryin' only a few minutes ago; but we couldn't get them out, and "

Greavey leaped to the hydraulic jack upon which the four men assigned to the engine were working.

"Bennett's in there—maybe alive—and Clarke, his fireman!"

The wreckers responded with new effort.

A vagrant breeze blew away the smoke that shrouded it and Greavey saw, pinned back in the cab, a figure.

"I can get him!" he snapped.

He climbed upon the tangled mass of iron. He dived head first into its red-hot depths. He felt his flesh wither beneath the searing touch of the hot iron—but he had the man's shoulders and was backing out.

There was no use trying for the other man. His mangled form was wedged between the cab and the tender and he was dead. Greavey drew the form he had rescued out of the red-hot hell.

He carried the engineer in his strong arms to the embankment, forgetful of his own seared arms and chest and legs. He placed the man gently on the ground. The mangled form moved slightly. Bennett's seared lips fluttered.

"Can you talk, old man?" asked Greavey.

A flicker of light shone in the eyes of the dying man. A flicker of recognition.

"You—Greavey—you did it—for me? For—her. God bless you, old man. I—wanted to send—a last—word to her. Tell her—she'll know. And Greavey—you'll see that—no harm "

"I'll do that," promised Greavey.

The dying man sighed.

"She always—liked you—next to me. And—you'll keep your—word."

He was going fast. Duty rose before Greavey. He must learn the cause of the wreck.

"How did it happen, Jack?"

"Not—my—fault."

A glow of pride—the pride of one who has done his duty well, though in the doing death has claimed him—shone in the fading eyes.

"Not –my fault. The rail gave—I—could *feel* it—and the air wouldn't work. Those—triple valves—rotten ties—economy—murder—love—to—Molly."

Greavey doffed his jacket and spread it over the still white face of the man who had won Molly Bennett from him because of the lying tongue of Durkin, and who for all that his victory had been accomplished through Durkin, had been loved by Molly and was worthy of her love.

Bennett had lived a man; he had died a man.

Silent, grim, forgetful of his burns, Greavey made his way down the track, almost unconscious of the wailing passengers, to where Tyler and his crew worked on the overturned Pullmans.

Greavey had looked upon death just now. As if he felt its icy touch on his own shoulder and knew that the valley of the shadow was around the corner, he hurled himself into the work of rescue.

Some one must tell Molly! He must deliver Jack's last message. The thought of that duty made life seem no longer sweet. Like a demon he worked. Time and again he crawled beneath the blazing cars to drag some unconscious human to safety.

He pulled a man from a compartment in the last car. The man was uninjured, but had been pinned in the wreckage by a fallen door. Free, he clung weakly to Greavey.

"I could see the flames coming nearer," he said, "and I'd given up hope. But now—tell me your name; you work for the railroad, don't you?"

"Yes," snapped Greavey.

"Then give me your name; you saved my life and I won't forget it. I'm MacAllister, president of the road."

Greavey struck down the outstretched hand

"President of the road, eh?" he snarled. "Better not let the people around here know it, then, or they'd—"

Greavey turned on his heel to plunge into the work of loading the worst of the sufferers onto the hospital car. MacAllister looked after him. He turned to a man in overalls who stood at his elbow.

"Who—who is that man?" asked MacAllister, pointing to Greavey's retreating back.

"That—that's Greavey, superintendent of motive power at Mosston," said the man.

MacAllister's teeth clicked together. Durkin, who had given the information, smiled. He seemed to know that Greavey was in for trouble.

CHAPTER IV.

Durkin's Dire Hand.

GREAVEY was not compelled to be the bearer of evil tidings to Molly Bennett. As the super of motive power staggered up Mosston's main street, bandaged so that his nearest friends had difficulty in recognizing him, he saw the young widow's mother on the porch of the little house.

Molly, after being up all night, had learned the sad news from a passing trainman. She had fainted, and was now in bed under the doctor's ministration, said her mother, Mrs. Collins.

"She's better that way for now," said Greavey. "Poor lass."

"Poor lass, indeed!" cried Mrs. Collins. "And the other poor lasses who have lost their nearest and dearest! Cold comfort to them your words! Sorry the day when lads like Molly's Jack die because of the greed of MacAllister what thinks only of the dividends!"

"I thought of that when I'd pulled MacAllister out of the wreck," said Greavey.

"And if you'd thrown him back in again ye would have done well," cried the old woman. "I know! Hasn't Jack told us many the time that the road-bed was rotten."

Greavey looked at her sternly. "You have your own dead to think of, Mrs. Collins," he said. "And the living upstairs. You must not have such thoughts."

The old woman burst into sudden tears and she raced into the house, leaving Greavey to stare after her. He wondered how many other people were placing the blame as she did.

At his modest house he found awaiting him an alert, brisk young man.

"Mr. Greavey?"

The super of motive power nodded The young man led the way into the little parlor with the most assured manner in the world. He flipped a fold of note paper from his inside pocket and produced a pencil from another receptacle.

"I'm Blake—Henry Blake, of the district attorney's office," said the young man. "We aren't wasting a second of time, Mr. Greavey. Last night's wreck was too unnecessary. We're after the cause."

"How should I know?" asked Greavey coldly. "I was not there when it happened. I'm tired and must get to bed."

The young man's eyes narrowed. "I understand, Mr. Greavey," he said. The whole town is ringing with praise of you. But it is essential that I speak with you—learn from you the cause of the wreck, *now*—before—"

"Before what?" asked Greavey.

"I want to get each man's story at first-hand. I want to get these stories before notes have been compared. Not that the truth would be refused me, but because—well, after men have talked a thing over they unconsciously accept each other's impressions as their own. I want to avoid that. First—you've been complaining about being short handed in the inspection department, have you not?"

"Have I?" asked Greavey.

The young man nodded. "Yes, you've complained that the grade of oil was poor, that the engines were not gone over before going out and that you knew for a fact that the road-bed was rotten."

That part of Greavey's face that could be seen through the bandages twisted in to a painful grin.

"And what else have ye learned about me?" he asked.

"Why, we know that you talked with Bennett before he died. Also, you spoke insinuatingly to President MacAllister."

Greavey had let his weary body relax in a chair. Now he rose to his full length and towered over the alert young man.

"Lemme see your credentials!" he snapped.

The young man flushed. "Credentials?" he gasped.

"Sure," snapped Greavey. "You're

a newspaperman, you're not from the district attorney's office. You want news."

"Well—why not?" asked the young man.

"Why not? You ask me that? You ask me to knock the road the road I was raised on—the road that's been my mother and my father and my family? No district attorney would talk as you've done. You'd have come with a summons and—get out!" he roared.

But the young man kept his chair.

"Now look here, Mr. Greavey," he said, "you don't understand. Perhaps I have tried to play a little trick on you, but "

"No 'buts!'" cried Greavey "Go to the skunk -I know him—that gave you what information you have. Go to him the disloyal scut but don't come to me. Out with you!"

The young man rose to his feet. "You call that other man disloyal? Disloyal to what? Not to his State, Mr. Greavey. Nothing less than murder was committed last night—wholesale murder—sixty lives snuffed out. The people will want the truth -and they will have it! Are you going to shield murderers, or are you going to tell the truth? Is your duty to your employers higher than your duty to your State?"

"Get out!" said Greavey, thickly.

The young man reading the anger in the bloodshot eyes, in the working features that caused the bandages to rise and fall, obeyed.

Greavey shut the front door behind him. He plodded wearily and heavily up the stairs to bed.

"Betray the road, is it?" he said to himself. "That Durkin why, some dogs bite the hand that feeds them. I'm not that kind!"

CHAPTER V.

McAllister's Threat.

GREAVEY slept the clock twice around. It was noon of the following day before he got out of bed, bathed, dressed, ate a hearty breakfast and made his way to the yards.

He did not pause to read a morning paper, nor did he do more than nod to many people who would have spoken eagerly to him. For in that long sleep he had been dreaming He had lived anew the scenes of horror of the previous day. Now, with exhaustion departed, he was able to see more clearly the criminality of the expense-paring policy that caused the wreck.

His heart ached as he passed the modest Bennett home and saw the crape hanging from the door-knob. And there were other Mosston houses that bore the badge of bereavement.

With downcast head Greavey entered the shops and started for the locker where he kept his working clothes.

A man joined him at the locker.

"The big fellow's over in the offices," said the man. "He wants you."

"Who?" asked Greavey.

"MacAllister—and he's hot under the collar."

"Well, do you blame him for feeling upset?" asked Greavey.

"I certainly don't," said the workman, "but you had your nerve with you."

"Aw, that was nothing," said Greavey. "Any one'd have done the same."

"I ain't talkin' about Bennett or the other people you hauled out," said the other. "I'm talkin' about what's in the papers." Then he stared unbelievingly at the super. "Ain't you seen it?" he asked

Greavey shook his head. "I been sleeping," he answered.

The man whistled. Then he thrust into Greavey's hand a copy of the Mosston *Star*.

"Look it over," he said.

As Greavey did so he realized that Durkin had sold his knowledge to the paper that had long been hammering the B. and I. and now gloated over this opportunity to make the road and its officials pay the reckoning.

Durkin had sold to the paper his diary —a diary that told of little things he had overheard the railroad officials say — evidences of criminal penuriousness he had gathered

The *Star* contained a photograph of the oil-can which Greavey had tossed to Durkin. Beneath it was written "Cheap Oil." There was a drawing of the triple valves of air-brakes. Below this was a statement, signed by Durkin, that many engines left the yards without hav-

ing the valves cleaned, so short-handed was the inspection department. There were also photographs of the rotten ties which, not holding the rail firmly, had been the cause of the train's overturning at Mountain Turn. At least, the *Star* said so, and further stated that if the air-brakes had worked, the loss of life would have been averted.

Greavey finished reading as he entered the despatchers' offices. With Jensen, the divisional manager, President MacAllister sat nervously closing and opening his hands and crossing and uncrossing his feet

"Well?" said Greavey.

MacAllister frowned at the man who had saved his life. "Have you seen the *Star?*" he asked.

Greavey nodded.

"Well," said MacAllister, "this man Durkin has told a pretty story."

"It's the truth—mostly," said Greavey.

"Are you defending that dog?" snarled the president.

"Dog is right," said Greavey; "but—you know yourself, sir, that the wreck would never have happened if it hadn't been for the way you pared expenses. Never a dollar for safety; the dollars went for dividends, and now—"

"Now, what?" snapped MacAllister.

"You've read the *Star* yourself, sir," said Greavey. He was wondering why the president so long delayed in firing him summarily.

"I have," said the president. "And—it's a tissue of guesses. It can't be proved. Criminal negligence can't be proved."

"Why bother to send for me to tell me that?" asked Greavey.

MacAllister bit his lip.

"Because," said MacAllister, "you're the only man who can disprove what this traitor Durkin has told the *Star!* The conversations he says he overheard—you were in all of them. You can say he lied. That unfortunate misunderstanding between you and myself—you can say he lied! I have already said so. And as for the inspection of cars—you can deny what he says. You can say that they were thoroughly inspected."

"To save you from jail, eh?" snarled the angry Greavey. The callous, coldheartedness of MacAllister had roused every drop of fighting blood in his body.

"The section boss whose territory covered the Mountain Turn happened to be aboard the Limited," said MacAllister slowly and sternly. "He was killed. He is the only man who could testify that the road-bed was not looked after properly there. His men are ignorant Italians. Their word can be discredited. And the section boss is dead. As for the rotten ties—he is to blame for them! He made no requisition for supplies or material of any sort to repair the road. Understand? He made no requisition! He must have been satisfied! If there was negligence, it's up to him—and he is dead."

"But he did make requisitions—"

"And they can't be found," said MacAllister. "The weight of the cars overturning, their heavy flanges pressing against the rails pulled the rails loose and made the ties crack open. But that was not due to rottenness! It was due to the heavy strain. The ties were all right no one can *prove* that they weren't."

"Then what did cause the wreck—in your mind?" asked Greavey.

MacAllister smiled cunningly. "Bennett, the engineer, went crazy; he was making too much time at the curve where the engine jumped the track."

"But that isn't so," said Greavey.

"I have the conductor's train sheets to prove that I gave him an order to tell the engineer to diminish his speed," said MacAllister slowly.

"A frame-up," cried Greavey. "You put the blame on Jack Bennett and—"

"If the engineer deliberately disobeys orders, and we can prove it," said MacAllister softly, "it absolves the road from liability. At least, it will make the damage suits so difficult that we can compromise easily."

Such callous heartlessness was beyond the ken of Greavey. He could only stare unbelievingly at the road's president and stammer:

"Then why—what do you want—with me?"

"If we prove Bennett disobeyed my orders—and the conductor's train sheets will be proof of that—the State officials may yet claim that the brakes did not work; they may claim that negligence was responsible for the wreck and that if the brakes had been properly inspected and cleaned the wreck might have been

avoided. Well, Mr. Greavey, you're superintendent of motive power on this division. And it's *up to you!*"

Greavey stared, unable to answer. MacAllister stroked his beard with white hands.

"Don't you see?" he asked. "If there was negligence—it simmers down to *you!* The bad condition of ties could be proved only by a dead man. The negligence of inspection—that's up to you."

"Great Scott!" cried Greavey, finding his voice at length, "how was I to blame? I've always kicked for a bigger force! I said that engines left the yard without proper inspection and—"

"To whom did you tell these things?" asked MacAllister.

"They're in letters to you!" cried Greavey.

The president shook his head. "You're mistaken. No such letters can be found. So, you see—if there was negligence, it was *yours!* You should have told your superiors that the force under you was insufficient. But you didn't—at least, you can't *prove* that you did. Therefore, if you admit the truth of Durkin's story, you will be found responsible for the wreck. Understand? You and no one else! You should have told your superiors that you needed hands—and you didn't! The records of the department will show that. Now then, Mr. Greavey, I am willing to overlook your insolence of yesterday. Are you with us—or are you not?"

Greavey dropped into a chair and buried his face in his hands. Strong man that he was, this "frame-up" unnerved him. Cunning he could never meet, for his soul was clean and his reasoning straightforward. He saw himself made responsible for the death of sixty persons. He saw himself—a faithful, honest, hardworking railroad man—held up to public hatred.

He looked up finally.

"But—makin' me the goat—how does that relieve the road of liability? If I was negligent—"

"But you weren't; you were careful; you did your best—always! Durkin is a jealous drunkard who lies! The engines *were* inspected properly. And the wreck was due to Bennett's disobedience—not to any negligence. Do—you—understand?"

Greavey rose unsteadily to his feet.

"You—you seem to have got me," he said, "but I want time—to think—it over."

"Better decide quickly, Greavey. It's jail for you if you admit Durkin tells the truth, that you did complain about the economical policy of the road," said MacAllister with a calm smile. "Yes, jail, and maybe for twenty years. The public is wild with anger and wants a scapegoat. And, Greavey, if we have to pay hundreds of thousands of dollars in damage suits—well, we have still some influence left even though the State's attorneys are after us hard. And, Greavey, if you go back on us—we'll see you get the limit. Understand? And when you come out of jail do you think a railroad in the world will hire a man who went back on his road? Do you?"

"Don't talk to me any more!" exclaimed Greavey. "I want to think."

Blindly he staggered from the room.

CHAPTER VI.

Greavey Surrenders.

THE road! From the first day of his employment Greavey had loved, served, and fought for the road. The habits of a lifetime are not easily changed. The unswerving devotion of the years are not lightly forgotten. After all, the B. and I. was no worse than other roads in the matter of economy. Just because there was a wreck it was no reason why the road should be condemned. If the B. and I. unfortunately was governed by a gang like MacAllister, well—after all, the president and directors are not the *road!*

Greavey almost forgot MacAllister's threats as he walked up the main street of Mosston. It was not because of fear for himself that he began to think well of the president's plan of action. It was the road! A man who would go back on the road was a Benedict Arnold. Greavey wouldn't do it! He'd go on the witness-stand and swear that

His blood seemed to thin in his veins. He felt nauseated. He, Michael Greavey, who feared neither man nor thing, was going to *lie!* For the road, yes, but—*lie!*

From the day he had been a sprawling

infant, Mike Greavey had honored no man's strength so highly as to lie to him. The other side of the question obtruded itself on his consciousness. A lie—even for the road, a lie was a lie—and only cowards lied!

Greavey straightened his tall, broad figure and squared his shoulders. He looked around half-guiltily, as if some one was present to read his shameful thoughts, and his eyes caught the wisp of crape that dangled from the door-knob of the Bennett home.

For a moment he forgot his own predicament, his own perplexing choice, in his sorrow for poor Jack Bennett, the man who had won Molly Collins and who had deserved her. Greavey walked through the little door-yard and up the stoop to pay his last respects to the man who had been.

White-faced, burning-eyed, Molly Bennett, in her widow's weeds, was alone in the parlor, alone with her beloved dead. She looked up at Greavey's big figure. Gently he approached her, shocked at her seemingly uncontrollable grief. He took her hand in his own calloused palms, as if to transmit to her some of the strength and courage in his own great body.

"Now, Molly, you mustn't be lettin' yourself go," he said. "You must be brave, girl. Sure, Jack was a man, and he loved you till the last, Molly."

"He *was* a man," she said. "And you were a man to try and save him. God bless you, Mike, for that. I'll never forget. And Jack—from where he is, he blesses you for what you did. But," and she withdrew her hand and stared at him with a new and sudden coldness, "will he be blessing you for what you are about to do?"

Greavey flushed. "What do you mean, Molly?"

"You know," she answered quietly. "You are going to steal his good name—and he can nevermore defend it. The word has been slipped around. It's come to me already, while I'm sorrowing for the man they murdered—*murdered!* Killed by their criminal carelessness; him and sixty others! And they're going to put the blame on Jack. Oh, I know! A newspaperman has told me. My Jack, that was always careful, my Jack is to be blamed for the death of sixty people! And why? So the B. and I. won't have to pay damages to the families of the people it murdered. For that I'll have to wear the badge of shame forever! The Michael Greavey who pulled my husband out of his burning engine is my friend; the Michael Greavey who will swear on the stand that my Jack's recklessness was the cause of the wreck—I do not know, and I bid him go!"

She did not raise her voice. She was not looking at the crimson-faced giant, but at the white face of the man who had been her husband.

Greavey tiptoed from the room; aye, tiptoed softly out to let the old, old strife between right and wrong wage new warfare with his heart as the battle-ground.

It was late that afternoon when the battle ended. Right had won.

For Greavey had seen the truth. He had learned that a chain is not better than its weakest link; that the road was no better than the men who governed its destinies. And when the superintendent of motive-power recognized truth, he was one to follow its dictates.

If a dead man were to be blamed unjustly for the holocaust he, Michael Greavey, would not stand for it! Let the road bear the blame! Let the road forbear its attempt to stain the name of Bennett and blight the widow's life! Let the road pay the damages to the orphaned and widowed!

And yet—was it square to go back upon the road? Was it square to try and place the blame higher up than himself? Yes, it was, but—the soul of Greavey was the soul of the railroad man—and the railroad man hates a squealer.

Could he say that he had begged for more men, had begged for better oil, had pleaded for more inspections? He had not answered these questions when he reached the district attorney's offices.

"My name is Greavey," he said to the doorman. A moment later he was repeating this to the district attorney himself.

"The superintendent of motive power? The man mentioned in the *Star*?" asked the district attorney.

Greavey nodded.

"We were going to issue a warrant for you to-night," said the official.

"Have you come here as a State's witness?"

"I dunno," said Greavey. "I don't think so; I'm no squealer. I've just come—to—give myself up."

The district attorney stared at him. "You mean that you admit yourself guilty of criminal negligence?"

"I mean," said Greavey, "that it wasn't Jack Bennett's fault that there was a wreck. It was the fault of bad inspections, poor ties, and—"

"I've heard MacAllister's story," said the district attorney. "One of my assistants got to him an hour ago. And he claims that it was Bennett's fault, unless—unless there was negligence in your department. MacAllister says that you deny this. He also says that you never complained; never asked for extra men, and—man, do you realize what you're letting yourself in for? It means that you're responsible for this wreck, and—"

"I'm lettin' myself in for the truth!" said Greavey. "And if the truth is to hurt me, well—better men than I have suffered for the truth."

The district attorney's eyes flashed unwilling admiration. Then he pressed a bell and an officer entered.

"Take this man to a cell," snapped the district attorney. "I can't take your affidavit now, Greavey. I'll do so the first thing in the morning. Come back here, officer, when you've locked him up."

In five minutes the officer returned.

"Have more detectives put on the trail of this man Durkin," snapped the district attorney. "I didn't believe his story would be worth anything, but—if this man Greavey has weakened—get Durkin! Tell the chief of detectives I said to drop everything else. Get Durkin. He can't have left town. No one has seen him board a train. The *Star* isn't hiding him—they bought his story and let him go. He must be found."

CHAPTER VII.

Forced to Confess.

DURKIN had sold his story within an hour after his return from the scene of the wreck. Then he had disappeared. The *Star* was not run by fools. Its editors realized that they must be able to produce Durkin to back up the diary which they had purchased and which, next morning, it featured on its front page beneath screaming scareheads.

But the *Star's* editors had assigned to keep track of Durkin a callow cub reporter. Durkin had discovered that he was being followed, and had eluded his shadow. Likewise, it had been impossible during the rest of that day to pick up the former engineer's trail.

The next morning, therefore, young Blake, he who had endeavored to fool Greavey into the belief that he came from the district attorney's office, was ordered by his city editor to locate Durkin. From all reports, it was evident that Durkin had not left town.

Blake, the cleverest "sleuth" on the *Star's* staff, worked all day without result. Durkin could not be located. By sources of information that are open to all reporters, Blake learned that Durkin was being sought by the district attorney, for, as evening arrived, it became known that Greavey had given himself up.

He would probably deny Durkin's story, reasoned Blake; therefore, it was now imperative that Durkin be found. Blake combed the cheap resorts of Mosston, where it was supposed Durkin was "blowing" the money the *Star* paid him; but in none of them did he hear of Durkin.

Meanwhile, having thrown off his shadow the previous day, Durkin hid himself in the back room of a saloon which had no license and was unknown to the police. Here he drank himself into a most vainglorious stage of inebriety. He lost his sense of value and perspective. He was about in the mood of the man who puts his head into the noose and begs the hangman to spring the trap.

Emboldened by bad liquor, Durkin didn't know enough to keep his mouth shut. He wanted to brag, to boast!

He, too, had heard, by nine o'clock that evening, of the surrender of Greavey; but what good was it to brag about his encompassing of Greavey's downfall to the sodden wretches who were accepting his hospitality? How much better to go to some one who would appreciate his power and then

show people what an important personage he was!

Moreover, there was something suspicious in the glances which the bartender now and again bestowed on him. Also, one of his guests had mysteriously disappeared.

Durkin began to feel uneasy, though he did not know why. Suddenly he rose from the table and slapped a bill upon its greasy surface.

"Give the boys another!" he ordered—and before any one guessed his purpose, Durkin had slipped through a side door and was on the street.

Though somewhat intoxicated, his feet were firm beneath him and his manner quiet. But his brain was burning and he sensed danger in every glance that came his way.

Greater than his liquor-born fear was his desire to brag. From the side street he made his way to the main street of Mosston. There he started toward the home of Molly Bennett. As he passed an arc-light Blake, about to give up the chase for Durkin, saw his man.

The reporter hurried after him, but Durkin turned in at the Bennett home and Blake drew back. The house of mourning was no place from which to drag Durkin. He would wait until the man emerged.

The latch was slipped back and Durkin walked unhindered into the house. He saw the candles in the little parlor and for a moment hesitated. In that moment Molly entered the hall. She saw him and stopped suddenly. Durkin fumbled with his hat.

"I come—to tell how—sorry—I am," he said.

Beneath her cold glance his eyes fell. She knew Durkin—knew his yellow soul. But though she knew there was no sorrow in his evil heart, this was no time to evidence her knowledge.

"I thank you," she said.

She turned as if to mount the stairs that led to her room, but Durkin stayed her.

"You ought to be glad I—was able to prove—it wasn't Jack's—fault," he said.

"I thank you," she said again.

Her coolness irritated Durkin. The coldness of her voice roused his anger, and anger made him show his state.

"Is that all you can say?" he asked. "Thank me? Huh, the *Star* paid me two hundred dollars cold cash."

"I have no money," she said. "The fact that you have helped to clear a dead man's name should have been enough for you. You should not have sold your knowledge. However—"

Again she started up the stairs, and again his voice detained her.

"I don't want money from you," he said. "I just thought you'd be nicer to me."

The white face of her husband rose before her. This was the man who had lied about Jack, who tried to break up their love affair; and now, with Jack lying in the next room, he wanted her to be "nice" to him.

"Please go," she said faintly, sick at his continued presence.

Durkin leered. "That's the way you treat me, eh? Well, what do I care? There's other people will treat me right. Greavey, down in his cell, Greavey'll kowtow to me, you bet. I put him where he won't get out for a long time to come."

"You mean your information published in the *Star?* Mr. Greavey can't be in any danger from that. All he needs to do is prove that he wrote to the president and to his superiors for more men, and he'll be all right."

"And he can't prove it," jeered Durkin. "He can't prove it! They'll deny having received any such letters, and—*I* could prove it, but I won't."

The young widow stepped trembling from the stairs.

"You?" she said coolly. "What could you prove?"

"Me? I could prove lots," said Durkin. "But I ain't goin' to. Why should I try to save the scalp of Greavey? Didn't he tell you about my being engaged to a girl when I was courtin' you?"

"He told the truth," said Molly.

"Yah, but he didn't have to say anythin', did he?" snarled Durkin. "He could have kept his mouth shut; but he didn't. But I—I'll keep my mouth shut about him now. I've got him where I want him. Hurt me with you, would he? Well, remember how I told you that he was married and had deserted his wife? Remember, don't you? Well,

you threw him down for that and married Jack Bennett, and—"

Desperately, Mrs. Bennett strove to bring him back to the immediate issue. With all the cleverness of her sex, she touched his weak point his vanity.

"Why, I never believed you at all," she said. "I'd never believe you in anything. You? Why, you never had the slightest influence with me. I loved Jack. I knew you lied then and you're lying now when you say that you know something about those letters."

The combination of liquor and rage were too much for Durkin's cunning.

"I am, am I?" he snarled. "Maybe you'd think different if I went to court and told what I know. They've got to take my story about what Greavey used to say about their economy and refusin' to give him more men and better oil and things. They'd have to take my word now. And I know that Greavey wrote to them for more men. I know that he complained about his poor equipment and small force. I *know!*"

"I don't believe you," she said, goading him on. "You'd say so, but — you haven't any proof. The information you sold the *Star*, that you kept a diary, makes it seem true; but this other you can't prove it!"

"No? Let me tell you, then! I've got a friend in the main offices at Clearville. He's file-clerk in the president's office! Understand *file* clerk?

"One day I was down there—and he left me alone in an office! I was wise; you bet I was wise! Even then I was gathering every little thing I could, whether it helped me or not, to some day get square with the man that made me lose my engine and the road that took his word against mine.

"I found some letters—I had time to take two. They were from Greavey to MacAllister—no other! He complained about the oil. He said he didn't have enough inspectors—oh, lots of things.

"But those letters don't help me in getting Greavey. Later on I'll have MacAllister under my thumb with them, but now — I've got them hidden away. I've got them, and "

He had told the secret which would prove guiltless of criminal negligence the man who had once paid Molly Bennett the honor of desiring her in marriage, and who had risked his own life to save that of her husband.

Molly's mother was in bed up-stairs; the neighbors had all gone home. She was alone. How could she make him repeat what in his drunken anger he had blurted out.

Suddenly, from a little table, she snatched something that gleamed in the dim hall light. She thrust it against the ribs of Durkin.

"You'll write that down! The letters might be lost! You'll write that down—and sign it," she panted, "or—"

The end of a pistol pushed harder against the ribs of Durkin. Inebriation left him; only deadly fear was now in his heart and brain.

"Be careful," he gasped. "It'll go off, and—"

"It will unless you write that down what you just said," she gasped.

Again she reached to the table. She picked up a block of paper and a pencil.

"Write it," she commanded. "Make it short—but write it!"

With fingers that shook with dread, Durkin wrote what he had just told her. He straightened up at last, and the round object still pressed his ribs.

"Now go," she said. "Go!"

He staggered toward the door and opened it. A figure stood outlined on the porch.

"Save me from her!" gasped Durkin. "She's crazy and might shoot, and—"

"What's the matter?" asked the voice of the young reporter whom Molly had met earlier that day and who had told her the news of the road's defense and the blame that would be her husband's.

"Grab him!" she gasped. "He—I just made him sign—a statement that—absolves Jack—clears Mr. Greavey, and —don't let him go!"

But there was no need to cry that command. Blake's fingers were gripping the collar of Durkin.

"Give me the paper, Mrs. Bennett," said Blake. "I'll look after it and this man, too."

She handed him the paper. In the dim light he read it.

"Good," he cried. "Mrs. Bennett, you've made out the State's case against the men who are really responsible"

"I—I'm glad," she sobbed. "I—Mr. Greavey tried to save Jack, and- "

She could say no more. After Blake had dragged his unwilling captive away, she looked at the object which had caused Durkin to write and sign the potent statement. Then, through her tears, she smiled. What Durkin had taken for the muzzle of a revolver, was but the neck of a bottle

CHAPTER VIII.

For Love of the Game.

THE private car of the new president of the road was backed into the yards, halted, and a clean-faced man, brisk in manner, youthful in walk and appearance, notwithstanding the tinge of premature gray at his temples, alighted. He walked up to the superintendent of motive power.

"Is this Greavey?" he asked.

The super nodded.

"Come into the office," said the newly elected president. "I want to talk over that resignation of yours. Come along!"

In silence Greavey followed his chief along the tracks and into the little frame building that was the divisional office. The president selected a chair and motioned Greavey to another one

"Let's get the rights of this," said the president. "You wired your resignation. I replied to wait until you saw me before quitting. Now let's get down to brass tacks. Are you dissatisfied with your place here?"

Greavey shook his head. "It ain't that," he said, "but -"

"Well," encouraged the president, as the super faltered, "go ahead."

"It's like this, sir," said Greavey. "MacAllister is under indictment; so are the board of directors. It was my testimony that did it. I tell you, sir, it hurt to testify against them that had been my chiefs. Of course, they done wrong, but—I know the heirs of them that died deserve compensation.

"I'm an old railroad man, sir, for all I'm short of forty years of age. And I know railroad men, sir. I know what they think of squealers. Now that I've testified against the old president and the old board of directors—now that I'll have to testify against them again at their trials—will the men have any use for me? Ain't my usefulness done?"

The president pursed his lips. "There's truth in what you say, Greavey. I guess, after all, we'll accept your resignation."

"I thought you'd see it, sir. Good afternoon, sir," said Greavey, as he rose to his feet. He had almost reached the door when the president called to him.

"But you haven't accepted the new position yet, Greavey."

"What new position?" he asked.

"Divisional manager."

Greavey stared at the president.

"Greavey," he said, "did you think the B. and L. would let a man like you go? There's been crookedness in this road. It's gone! For the sake of dividends there's been criminal economy. It's gone! We're going to make the B. and L. the best road in the country, and who can help better than the men who love the road?"

"You went to the district attorney and gave yourself up. Next morning you refused to talk to him. You simply said that engines had gone out without proper inspection. You shouldered the blame yourself. If the letters Durkin stole from the files hadn't come to light—but never mind that.

"The point is this: You were too much of a man to let the widows and orphans go without compensation. You knew that if negligence on your part was proved they'd be entitled to recover from the road. But you wouldn't give the road itself a black eye! You wouldn't let it be known through you that the road itself was rotten. You loved the road, and you wouldn't go back on it, even when the doors of jail stood wide for you! Greavey, your code is the code we want."

Greavey walked to the window of the office. Down below the yards were filled with busy men whom he knew and whom he considered part of the big family of the B. and L. Everywhere was the bustle and hum and confusion of railroad life. The clang of bells and the hiss of steam were calling him back to the work he knew—and which seemed to be more than a part of his life.

He looked on the busy scene for a lingering moment. Then he slowly turned to the president.

"I'll stay, sir," he said, as he gripped the president's hand. "I'll stay."

CAJON PASS.

BY LYDIA M. DUNHAM O'NEIL.

O DREAD Cajon, O drear Cajon,
What fiends grim with hearts of stone,
Dost thou within thy wilds conceal,
Who from their hiding-places steal
By night or day, or twilight gray,
To pounce on helpless human prey;
Unto a region vast, unknown,
To bear our loved ones, dread Cajon?

O dread Cajon, O drear Cajon,
Say, dost thou know that we have grown
The mention of thy name to fear,
Lest some one, to our hearts most dear,
Within thy arms has fall'n asleep?
For men must die, though women weep;
Though we be helpless and alone,
Thou carest not, O dread Cajon.

O dread Cajon, O drear Cajon,
Too-many times the sun has shone
On twisted rails, and splintered mass,
And shattered hulk of steel and brass;
On staring eyes and faces white,
And rigid fingers, still clenched tight,
And lifeless bodies, lying prone
Upon the ground, O dread Cajon.

O dread Cajon, O drear Cajon,
Is it the winds that sadly moan?
Ah, no! It is unnumbered hosts
Of dead men—pale and restless ghosts,
Who haunt these spots and vainly cry
Forever, to the earth and sky:
"When will thy power be overthrown,
Thou dread Cajon! thou drear Cajon?"

THE END OF THE TICKET-SCALPER.

After a Decade of Legislation and Bitter Warfare the Firms That Have Profited by Illegal Trafficking in Railroad Tickets Have Been Driven to the Scrap-Heap by the Government.

BY H. A. KOACH.

(Assistant to the Chairman of the Railway Ticket Protective Bureau.)

HE end of the ticket-scalper has come. Driven from one State to another by the passage and enforcement of stringent laws, the hand of the Federal government soon will descend heavily on him. Then there will be no place left for him in America, the last of his strongholds in the civilized world.

At the next session of Congress an amendment to the Interstate Commerce act will be presented. It is endorsed by the Interstate Commerce Commission. There is little, if any, doubt about its being adopted.

It will supersede all State laws on the subject. It will make ticket-scalping a misdemeanor, and the forging or altering of any evidences of transportation a felony. The prosecution of the offenders will be in the hands of the Federal authorities.

When this amendment to the Interstate Commerce act becomes a law the United States will cease to be the only country in the world in which ticket scalping is countenanced by the government

It has been debarred for many years in Europe, Canada, and Mexico. The Hepburn bill, in creating the Interstate Commerce Commission, ignored ticket scalping, but fixed severe penalties for a railroad or its employees that gave rebates or cut rates.

The passing of the ticket-scalper marks the ending of a struggle that has lasted more than ten years. It also illustrates strikingly the revolution that has taken place in the railroad business. Not many years ago brokerage in railway tickets was regarded as a perfectly respectable and lawful industry. It was not uncommon for passenger officials themselves to send bundles of tickets to scalpers.

In the course of time, however, the conscience of railway officials and other citizens was quickened to a perception of the fact that the nature of the scalper's business was such that nobody could honorably have dealings with him. The disreputable character of the scalpers' transactions was uncovered and made manifest day after day by the work of the Railway Ticket Protective Bureau.

This bureau was effectively organized February 3, 1903. All the railroads in the United States belong to it. The objects of the Railway Ticket Protective Bureau have been the detection and prosecution of forgers, counterfeiters, and unlawful manipulators of railway tickets and other evidences of rights of passenger transportation.

There was need for such an organization. What this bureau has discovered in the last ten years in the extent and character of the frauds perpetrated by the lawless ticket-scalpers is astounding.

It is no exaggeration to say that hundreds of thousands of dollars were diverted annually from the passenger receipts of the railways by systematic methods of fraud

Tickets and Passes Forged.

Forgery and the criminal manipulation of tickets and passes were usual and ordinary features. In addition to this the scalpers often succeeded in corrupting railway employees and making them accomplices in crime

When the Railway Ticket Protective Bureau was organized the elimination of the ticket-scalper, that now has been accomplished, was not thought possible. Ticket-scalping was a huge and strongly entrenched business.

The passenger earnings of the railways of the United States for the year ending June 30, 1904, were $539,428,374. This was the rich field that the scalper considered his legitimate stronghold. How much he looted it can only be approximated from some exact details as to the amount of money that was spent by organized ticket-scalpers.

The American Ticket Brokers' Association was one of the largest of these "scalping syndicates." It had two hundred and five members in the United States and supported permanent offices at Louisville, Kentucky.

Another was the Guarantee Ticket Brokers' Association, which had a membership of sixty-five and had permanent headquarters in Chicago. In addition there were scattered throughout the United States nearly two hundred other scalpers who were not members of any organization.

Some were affiliated with what was known as the American Travelers' Brokers' Association and others with the National Ticket Brokers' Association. These, however, were simply mythical organizations. They had neither offices nor officers.

Fortunes Spent to Maintain Offices.

There were nearly 500 established scalping offices in all. In addition to these there were a large number of itinerant scalpers who flocked to every city where there was a convention or any other large assemblage of people who came by railroad.

They were like the vultures that followed the circus with their "skin games."

Of the two hundred and five scalpers who belonged to the American Ticket Brokers' Association at least one hundred maintained large and expensive offices. Usually their offices were in the best and most expensive business districts of the city. It is fair to estimate their rentals at an average of $2,000 a year for each office.

The same may be said of the offices maintained by the sixty-five members of the Guarantee Ticket Brokers' Association. That makes a total of $340,000 a year for rent alone for these two organizations. In smaller cities the rentals and general office expenses were considerably less.

The expenses of a first-class scalping office, such as those maintained in Chicago, averaged, beside the rental, about $11,250 annually. There were at least two scalpers in Chicago who paid a rental of $5,000 a year for their offices. Probably the twenty-three established scalpers' offices in Chicago had running expenses of about $100,000 a year.

One of the best known scalpers controlled more than twenty offices throughout the United States. It is said that he paid about $75,000 a year for rent alone. In each office there was a manager at about $2,400 a year, and from one to two clerks whose salaries ranged from $1,200 to $1,800 a year. In the larger offices there were four clerks and a bookkeeper and stenographer. The stock of railway tickets necessary to maintain these offices must have represented an investment of more than $500,000 a year.

It was necessary for the ordinary scalper, whose expenses averaged from $5,000 to $6,000 a year, to have in his possession each day tickets that had cost him between $4,000 to $5,000. These consisted to a large extent of non-transferable, limited excursion tickets and mileage.

The regular round-trip non-signature tickets seldom were sold to scalpers by the traveling public. Purchasers generally returned the unused portions direct to the railway companies for re-

demption. The round-trip excursion tickets that were sold at the price of a one-way fare—or even at a less rate—were the most profitable for the scalper to handle—and he was always out for the most money in the least time.

Notwithstanding the various safeguards with which these tickets were surrounded, they were "scalped" very extensively. "Scalping along the line," as it was termed, was the usual custom. The through ticket would be sold from point to point through the aid of the scalper's "correspondents" located in different cities.

The purchaser would pay the full price demanded by the scalper and would receive a rebate check for a certain sum of money on delivery of the unused part of the ticket to the "correspondent."

The same ticket, which the railroad issued for the individual use of one passenger, would carry a dozen or more before it was used up. The scalper was, of course, able to sell the ticket between local points at a great reduction from the regular tariff rates. This made a lot of trouble for the railroads.

Tickets Plugged and Forged.

It was the greed and impudence with which the scalpers defied the law that brought about their downfall. They did not confine themselves to acting merely as ticket brokers.

They "plugged" expired tickets and gave them a new lease of life by extending the time limit within which they could be used. They altered to suit their purposes the descriptions of passengers entered on tickets for the purposes of identification. They altered the names of stations to which the tickets were originally issued, thereby enhancing their value.

To prevent these tickets from reaching the auditing department of the railroad company, the name of the station forged on the ticket was a point beyond the terminal of the line issuing it. The ticket was sold only to a person who was going to the terminal point. Naturally it was not taken up by the conductor—only punched by him—and the traveler was instructed to mail the ticket to the scalper on his arrival.

When it reached the scalper's hands again he would promptly fill in the conductor's punch marks by "plugging." In this way the same ticket was used over and over again without the railroad company carrying the various passengers getting any record of the transaction.

The scalpers also were adepts at erasing the validating stamps on tickets and the stamps showing dates of sale. They would complete the job by erasing the purchaser's signature also, and the name of the railroad's selling agent which appeared as a witness to the purchaser's signature

That left the ticket with all the blank spaces for the scalper to fill in as he pleased—and his pleasure led him unerringly in the direction of the most money. Taking a coupon from one ticket and substituting it for a coupon on another was done whenever it was necessary.

The forging of an entire ticket was resorted to frequently. That these criminal practises netted the scalpers enormous profits is proved by the lavish way in which they spent money in conducting their business.

The operations of these dishonest scalpers were a source of constant temptation to railroad employees who had a dishonest streak in them. There were many instances of tickets being stolen from the auditing departments of railways.

Ten Dollars for a Fifty-Cent Ticket.

These tickets would be sold to scalpers, who would "plug" up the punchholes, erase all writing and stamps, and thus make the tickets as serviceable as if they never had been used.

It was the itinerant scalper who was the boldest. Itinerant scalpers have been known to forge large quantities of tickets, especially to meet the demands that arose on account of some big convention. The destination of these forged tickets would be some point beyond the one where the assemblage was to be held. During the rush of travel they would not be discovered until the affair was over, and by that time the scalper had disappeared to work some other field.

The loss to the railways from these

practises was so appalling that it frequently demoralized their managements, to say nothing of the effect it had on the traveling public in the way of cultivating a spirit of what might be called "contributory dishonesty."

The railways were forced in many cases to abandon all excursion business

"I was a dealer in second-hand railroad tickets for thirty five years," said a man who had been president of the American Ticket Brokers' Association. "I was a ticket broker, or scalper. My offices have stretched in a chain across the continent from San Francisco to Bangor, Maine. But I am retiring from the business and have closed all my offices. By the railroads and by the public in general, ticket-scalpers are looked upon as dishonest men. While this is not always true, it is true in ninety-nine per cent of the cases. The skill which some scalpers have attained in deception is worthy of a better cause

"The ease with which tickets can be manipulated and their value enhanced is incredible. Here are some of the methods they resort to—actual facts, all of them

"It is possible for a broker to make a $20 ticket good for $75. It is just as easy to take a fifty-cent ticket and turn it into a $10 ticket. The brokers use acids to make erasures. They have all the paraphernalia necessary to make any alteration they wish.

"Sometimes the railroads play right into the hands of the dishonest broker. A case of this sort was once discovered by accident by a scalper who was riding on the Grand Trunk, and he used it to good advantage until the railroad officials got onto him.

"For some reason the Grand Trunk made a rule that the first conductor should take up the ticket and give the passenger a slip on which were printed rows of figures representing units, tens, and hundreds. The stations along the line were all numbered, so that '150' represented Portland, for example.

"A slip with the '150' punched indicated that the holder was entitled to ride to Portland on any train of the road, but there was nothing to show where he got on. The slip was taken up by the last conductor.

"The moment the scalper saw one of these slips he found a way to beat the railroad company. He got a ticket from Toronto to Portland, Maine, and sold it to a man going to Montreal. The purchaser delivered the slip to the scalper's agent in Montreal. The slip was then sold to a man going to a station west of Portland.

"When the purchaser was through with it he mailed it back to the Montreal office and it was sold again. This slip was used many times. One day the suspicions of a conductor were aroused He recollected that a slip bearing the same number had been used out of Montreal on two occasions and reported the matter to the company. The system was changed at once, but not before the broker had made thousands of dollars, for he had a number of these slips at work for him all the time."

Printed Their Own Tickets.

These were but a few of the conditions that confronted the Railway Ticket Protective Bureau at the time of its organization. Wholesale forgery of railroad tickets was being carried on also by several well-organized groups. Some of the "firms" even went so far as to print their own tickets

The forgery of regular tickets by means of acids, dyes, and types became so common that it was considered necessary for a scalper's office to be equipped with what was jokingly termed a "laundry"—a room adjoining the office, where tickets could be altered to meet the requirements of any customer. One of the scalpers made the boast:

"Give me any kind of ticket with enough coupons on it and I'll make it good to ride around the world."

When ticket-scalping flourished the railroads were constantly seeking methods to safeguard their tickets. This resulted in the tickets being loaded with so many restrictions that many of the passengers using them were confused about what to do after reaching the end of their journeys. Even the ticket-agents and conductors made mistakes also.

For instance, there were round-trip tickets that, in addition to the signature of the purchaser, witnessed by the signature of the railroad's selling agent, con-

tained a full description of the passenger his weight, height, and other details of appearance necessary to identify him.

Before the passenger could use the ticket on his return journey he had to call at the railroad's validating agency in the place to which the ticket was issued. There he was compelled to identify himself not only by signing his name, but by other means, before the return portion of the ticket would be made good for use

To offset the expense of these validating agencies the railroads charged a fee of twenty-five cents to one dollar. This was a very unpopular feature with the traveling public using these tickets. The average person looked on it as an unnecessary hardship—even as a "gouge"—imposed on him by the railroad.

Passenger Couldn't Raise a Beard.

There were cases, for instance, where a passenger's appearance would be altered between the time he bought the ticket and started on his journey and the day that he appeared at the validating office.

He might shave off his beard or mustache, for example. That sort of thing caused endless trouble and disputes, not only with the validating agents, but also with conductors. It made the railroads still more unpopular. In several instances suits were brought against railroads for not carrying the original purchasers of tickets

The scalpers were quick to take advantage of this new way to get money out of the railroads. One of the scalpers sent a man from Chicago to San Francisco with one of these "iron-clad" tickets. The man had a full beard when he left Chicago. Before presenting himself at the validating office in San Francisco he made as many changes as possible in his appearance

After a hot dispute he proved his right to have his ticket validated and started on his return journey. The conductor looked at him and then at the ticket. The description did not agree. The conductor insisted that he prove his identity absolutely. The man refused, and was ejected forcibly from the train.

He brought suit, and was awarded heavy damages. Fortunately for the railroad, however, a scalper who knew of the plot and who had quarreled with those back of it exposed the scheme and the damages never were paid. Undoubtedly there were many other cases, however, where this trick was worked successfully.

This particular experience showed the railroads the possibilities of trouble in the shape of lawsuits and judgments, not only in prearranged cases like this, but in *bona fide* ones. They noted, also, the growing antagonism of their patrons who wanted to buy round trip tickets.

Conductors grew lax. They feared to make errors in lifting tickets and eject ing passengers, no matter how suspicious they might be. Therefore the conductors took the ground that if the validating agency had passed the ticket there was nothing more to do. Thus the scalpers scored another victory.

Finally the railroads began to question the value of the validating agency plan They tried certificates. These were a part of round-trip tickets sold at reduced rates.

On presenting the certificate for the return passage a new ticket was issued on payment of the difference between the full fare one way and the reduced rate for the round trip. If the rate for the round trip was a fare and a third, the one-way fare would be paid when the ticket was bought and the one-third when the return ticket was issued for the certificate. But that proved to be no better than the old way.

Railroads Ordered by Police.

At one time in Chicago there was a G. A. R. convention. The validating agency was practically empty until the last day. Then, within the space of several hours, some six or eight thousand persons tried to get into the validating agency all at once.

The place, which was the agency for all the roads, might have accommodated a hundred persons. A riot ensued. Only a few persons succeeded in getting their tickets validated, and these could not get out of the office.

The police reserves scattered the infuriated mob. The police department issued an order that all roads should accept tickets for passengers leaving

Chicago that day whether they had been validated or not!

Meanwhile all sorts of so-called safety papers were being experimented with. Safety inks that "could not be erased" were used. The ingenuity of the scalpers kept a little ahead of the inventiveness of the railroads' scientists.

The contract portion of the ticket became longer and longer. It contained innumerable cautions about forgery, alterations, transfers, and so on. At one time there was enough reading matter on a coupon to keep a man busy for a quarter of an hour.

Another factor that bothered the big railroads at this time was the attitude of the smaller and weaker lines that were hungry for traffic. Frequently these roads would peddle large quantities of tickets to the scalpers at cut rates.

This was especially the case in dull seasons. The meetings of the passenger associations were marked by warm disputes. Some of the roads favored increasing the restrictions still further; others argued hotly that they should be removed altogether.

The passing of the ticket-scalper has been marked by the abandonment of validating offices and the dropping of most of the restrictions that once made coupon tickets such cumbersome affairs. Gradually the restrictions placed on tickets have been dropped.

The form in general use to-day has a simple contract and bears only the original signature of the purchaser and selling agent. Even this ticket is used only where a considerably reduced rate is made.

Wherever a plain, ordinary contract ticket can be used without the purchaser's signature, and with only the punched limit showing the date of the ticket's expiration, it is employed.

A still plainer and simpler contract ticket will be adopted universally when the Federal law goes into effect and the danger of manipulation by scalpers is absolutely eliminated.

All Scalper Organizations Disbanded.

It took some little time for the Railway Ticket Protective Bureau to make a thorough study and investigation of the situation that confronted the railroads. The executive board then announced its conclusion that there was but one way of protecting the railroads and the public against the scalpers, and that was by the absolute elimination of the scalpers.

It pointed out that all other preventive measures tried in the past had not struck at the root of the evil. Then the organized, nation-wide fight against the scalpers began.

The bureau prepared anti-scalping laws and succeeded in having them passed by a number of States, despite the lavish expenditures of the scalpers to oppose them. The bureau prosecuted the scalpers with every legal means at its command. Its corps of detectives secured evidence against the forgers and counterfeiters of tickets and sent many of them to jail. Against others it secured injunctions in the State and Federal courts and drove them out of business.

So vigorously was its campaign carried on that in a few years the bureau succeeded in reducing ticket-scalping to a small proportion of what it once was.

In the majority of States, through the enactment of anti scalping laws, and their enforcement by the bureau when passed, scalping was entirely eliminated.

All ticket-scalpers' organizations have been disbanded. The last went out of existence several years ago. Even the powerful American Ticket Brokers' Association and the Guarantee Ticket Brokers' Association gave up the fight. They saw their profits vanishing despite the huge sums they poured out to fight the Railway Ticket Protective Bureau, and their members closed their offices and sought new lines of business.

The bureau has had plenty to do, however, in fighting the itinerant scalper. In order to make it impracticable for him to continue his work, the amendment to the Interstate Commerce act has been sought.

The "fly-by-night" scalper is hard to catch and hold. His harvest is during the summer months. His field is any place where a convention or other large gathering is held. He may open a temporary office, or he may have his office in his hat, hanging around railroad stations and hotels.

It does not matter if the State in which he is working has an anti-scalping

law or not. In fact, he has not cared very much.

In summer both the State and Federal courts are likely to be on vacation. An injunction may be secured and served on the itinerant scalper, but he knows that before he can be prosecuted he must be served with notice to appear in court and show cause why he should not be prosecuted.

If the court is closed at the time, considerable delay ensues. It has happened frequently that a railroad has gone to great expense in securing evidence against a scalper and in otherwise preparing its case.

It has field its witnesses for a number of weeks until the attendance of a Federal judge could be secured. By the time the case was ready to be heard the scalper had disappeared. He might be hundreds of miles away, working the same game in another State.

While the bureau has found that both State and Federal injunctions have been a good weapon, this method is cumbersome and slow in its operation. It is powerful enough, but it seems like training a siege-gun on a jack-rabbit.

With the passage of this amendment to the Interstate Commerce act the ticket-scalper will become at once amenable to a Federal law. Injunctions will not be necessary — simply evidence to cause arrest, with the proper punishment on conviction.

Even State laws have been found insufficient. In some States the anti scalping law is so hard to enforce that it is almost as bad as no law at all.

In certain districts in some States attorneys have been found who were reluctant to prosecute violators of the scalping laws. At nearly every session of the Legislature one or more bills will be quietly introduced to have the anti-scalping law repealed. Therefore it will be seen that the Railway Ticket Protective Bureau's fight against the scalpers has had to be incessant, even if the enemy appeared to have been defeated.

The forgery of railroad tickets is rarer now than the forgery of bank-notes. The bureau also has kept an alert eye on the men who, by "trick and device," have made it a business of getting transportation out of railroads. One after another it has exposed these schemers.

The members of the executive board of the Railway Ticket Protective Bureau, to whom credit is due for this long fight that is now near its end, have served the bureau without compensation. It has been a "labor of love" with them. This is particularly so regarding the chairman, F. C. Donald, who practically organized the bureau and is responsible for its successful administration. The executive board is composed of the following representatives of various passenger associations:

F. C. Donald, chairman and treasurer, Central Passenger Association, Chicago; Eben E. MacLeod, secretary, Western Passenger Association, Chicago; James Charlton, chairman, Trans-Continental Passenger Association, Chicago; Joseph Richardson, chairman, Southeastern Passenger Association, Atlanta, Georgia; C. L. Hunter, vice-chairman, Trunk Line Association, New York City; J. E. Hannegan, chairman, Southwestern Passenger Association, St. Louis; N. E. Weeks, New England Passenger Association, Boston; Brode B. Davis, general counsel, Chicago.

DROVE SPIKE INTO SLUSH—SPLASH!

WHEN Lord Strathcona was called on to drive the golden spike into the last tie of the Canadian Pacific Railway, says *Railway and Locomotive Engineering*, the foreman in charge of the section was told to make a hole in the tie so that the precious spike could easily be extracted and preserved under a glass case. As it was early spring, with a thaw setting in, the foreman bored out quite a substantial hole, and, to make the ceremony of "driving the spike" appear real, he carefully filled the deep pocket with slush. When Lord Strathcona, bending low before a distinguished gathering, raised the mallet and drove the huge nail far into the tie, a powerful squirt of melted snow instantly darted back at him, covering his long beard and immaculate clothes in the most unexpected and embarrassing fashion, but his lordship did not forget to join in the merriment that burst forth.

Coogan's First Run.

BY WALTON BURROUGHS.

He Tells the "That Reminds Me Club" of the Time When He Thought He Knew It All.

"REMEMBER my first run? Huh!" drawled old Coogan, as he dropped down from the yard-engine and sneaked in the shade of the switchman's shanty, where the That Reminds Me Club was holding a session during a lull in traffic.

"Well, I reckon I do, and some of the old-timers wouldn't have to put the blower on their think-boxes to remember it, either.

"No—my first run wasn't on an engine, but I got considerably mixed up with engines before I got through

"Take it all around, that trip was a triumphal exhibition of the gentle art of railroadin', and for a few days I was more the talk of the road than I've ever been since—or want to be again

"I was a big, long, ganglin' smart Aleck hangin' around the little yards at the terminus of a twenty-mile branch of the main stem, thoroughly good for nothin' and hardly worth killin', when one day Jim Bickers, who was supe then, with always an eye open for raw material, clamped his lamps on me. From that moment I contracted the railroad bug.

"Jim got the original raw article, all right, when he tied to me, and it was as natural for me to be fresh as it is for the ocean to be salt.

"Outside my experience back in the little yards at home, which consisted mainly in buckin' water to fill caboose water-coolers, and savin' my pennies to buy chewin' for all the freight-crews, I knew about as much railroadin' as a bovine.

"I had an inkling, however, from observation, as to how the thing ought to be done.

"The road was in her swaddlin' clothes then—single-tracked, rough roadbed, poorly equipped, and always shorthanded, for a shack had to work like a pirate and steal brasses to make the dazzlin' sum of forty dollars a month. The local freight divisions were only two hundred miles long, and the whole shebang was run on a sort of 'git-thar-Eli' plan.

"Swallerin' my disappointment, that they somehow overlooked, because they didn't make me a conductor at once, and with a mental vow that I'd show 'em something that would open their eyes in the way of classy and up-to-date railroadin', I was ordered to report to that despised kindergarten for railroaders the local freight.

"When we pulled out of the yards that first mornin', and was gently hittin' the high and skippin' the low places on the main-line, the con ordered me across the tops to the center of the train, though I couldn't see why, for the caboose was plenty comfortable enough for me.

"I hadn't wabbled over half a dozen car lengths before it became impressed on my mind that we were travelin' at least ten miles a minute.

"I made wild side swipes with nothin' to catch hold of; I made false starts on one leg, then yanked back to where I started, and I shut my eyes and murmured a prayer when I jumped the gaps between cars.

"My hat blew off, and I hopped around nervous and fretful, like a grain

of pop-corn tryin' to find a cool place in a popper. The swayin', rattlin' and bouncin' gave me kinks in the backbone, the cinders blinded me, and the thick smoke made me sick.

"Up to then—if I ever had any—my superb nerve and self-assurance was leakin' out my eyes along with the tears. I was gettin' blamed sick of railroadin'.

"As the pitchin' and clatter got worse and the engineer tore holes in the whistle, I felt sure that the whole outfit was skatin' for the promised land on the ends of the ties.

"I dropped to my knees with a snivellin' blubber and, grabbin' the runnin'-board with a long-lost-brother hold, I said, 'Now I lay me,' and waited in terror for the moment when she'd roll in the ditch.

"Between spasms of self-pity I could picture the tearful train-crew tenderly gatherin' up my pieces in the caboose wash-pan.

"I tell you, it seemed pretty tough to die so young.

"Whether she rolled over and back again while I wasn't lookin', I didn't notice right then, for somethin' powerful steady grabbed me right where the suspenders cross. After an unnecessary yank or two I found myself on my pins.

"'Must be buyin' farms,' says the conductor, scowlin' and sarcastic, 'gazin' out there at the scenery! Think you're a tourist?' and he straightened me up with a curse and a push

"'Nope,' says I, tremblin', coughin' up a handful of soot and cinders and thinkin' what a terrible villain he was to act like that when we was about to be dashed to pieces.

"'How — how long can she stand it before she turns over? Can—can't there be nothin' did to stop her?' I asks, tryin' to remember some other kind of a prayer.

"He looked at me terrible disgusted for a second or two, then hollers like I was comin' along on the third section behind with my ears stuffed with cotton.

"'Turn over!' says he, makin' a swipe at me. 'Get up, you milkmaid, and wind up them brakes! That's what he's tryin' to do—stop her! Can't you hear him whistle?'

"Feelin' right smart relieved that the train wasn't goin' to turn over right then, my usual amount of freshness came back with a rush. Besides, my feelin's were hurt at him grabbin' holt of me, so I perks up sassy as an overfed sparrow.

"'Brakes?' says I, mighty contemptuous. 'I didn't hire out for no locomotive! What good's an engine if she can't stop a train?'

"I see he was impressed by the look of surprise on his face, so I starts in to relieve myself of some more of my hurt feelin's.

"'Besides,' says I, 'I want to tell you—don't you grab holt of me agin, you big —'

"A ringin' cuff on the ear explained the situation.

"At the first stop I unloaded some twelve ton of freight on my back all by my lonesome, and when the head shack suggested to the conductor that if we wanted to finish the run that month and I might better be wastin' time learnin' to make a couplin', my feelin's were hurt worse—but the conductor sniffed:

"'I'd sure like to get rid of him that easy, but the road's short-handed, and I'm goin' to try and get it back in as good order as I found it, ordinary wear and tear excepted. After that one of us has got to resign.'

"'It would be a shame,' says the head shack thoughtfully, 'to knock the varnish off'n a ornamental piece of furniture like that.'

"At the second station, while I was tryin' to learn by watchin' the head man make a flyin' switch, I dropped a case of eggs in an effort to imitate his signals. The cover came off and some of the eggs broke.

"The conductor made some hot-weather forecasts, but forgive me when I busted a case of whisky. He carried one bottle, with the label damaged, back to the caboose to see if he could fix it. I guessed he couldn't. He must have taken it to the shops, 'cause that's the last I saw of it.

"The third stop I rolled a hogshead of molasses to the door a little too fast -I guess. I didn't know it was so heavy, and I couldn't stop it in time; besides, I was learnin' my job by watchin' the head man ease a car in a sidin'.

"The barrel rolled off the skids and busted her head in.

"At the fourth pause I broke a slat off a crate of chickens. There was plenty of corn in the crate and I didn't think they'd want to come out. Anyhow, about the time I was thinkin' of fixin' it, I was busy listenin' to what the operator was tellin' the conductor. With the help of the citizens, we got 'em all rounded up in twenty-one minutes—all except one

"I got even with that smart head man, too. Anybody ought to have more sense than to try and take a chicken away from a stray dog! When him and the dog got untangled the braky had a mouthful of hair and a handful of speckled feathers and the dog was lopin' for seclusion with a ready-picked chicken.

"'Tain't no use to mention what the conductor said when I got even with him. Honest, I didn't intend to do it, but he let on like he was so strong, yankin' me around by the suspenders, that I was wonderin' how he'd come out in a rassle with somethin' big as himself

"After he got through with me he handed me a red flag and told me the flagman was jealous of me and wanted to make a try for the single-run destruction trophy I was tryin' to cop.

"I didn't understand what he was drivin' at, but he goes right on:

"'Just take this little banner,' says he, soft and polite, 'and stroll down the track out of harm's way.'

"'How far?' says I, tickled, for it looked a heap easier than hustlin' organs, oil-barrels, and washin'-machines.

"'A half-mile'll do, but if you feel plenty rested when you get that far,' says he, brightenin' up considerable, like an idea struck him, 'I can't stop you, and far be it from me to kick if you keep right on goin' till you're ninety years old.'

"Thinkin' he was tryin' to kid me, I asks:

"'What'll I do with the flag?'

"'Huh?' says he, wipin' the worry off his forehead. 'Oh! If you happen to be lookin' that way and it 'tain't too much trouble and you see anything comin', no matter if it's a hobo, a bull calf, or only a train, wave it gentle as you can without breakin' or smashin' anything up.'

"I went back a few miles, just like he told me, watchin' out careful, determined to let nothin' sneak up and hit me when I wasn't lookin'; but not meetin' anything, I soon got tired stumblin' over the ballast all by my lonesome—then runnin' back toward the train till I was winded for fear it was some trick of the conductor to leave me behind

"Well, when we pulled into Marshall to do some work I decided to go in the telegraph-office, out of the sun, and take a good rest. The walkin' and runnin' while stopped and the bouncin' while goin' had every bone in me achin'.

"The operator didn't take much notice of me at first. He was busy writin' somethin' on valler paper. When he looked up and started for the door he spotted me settin' there huggin' my flag.

"'You flaggin' the local?' says he, lookin' scared.

"'Sure!' says I, proud and sassy. 'If it's any of your business.'

"'Gee!' says he, and he went out with a jump

"I saw that I'd completely squelched him, but I thought I would follow him out and see what was his hurry. The next thing I saw was him and the con comin' back at me on the run.

"'Get out with your flag!' the con was shoutin', and that skinny operator was tryin' to help him by wavin' his hands. Somehow or other the con looked so put out and desperate his hollerin' made me get a move on.

The caboose was the only thing standin' on the main-line. The engine with the rest of the train was doin' some foolishness on the sidin'.

"It appears that extra 645 had left the next station behind us dependin' on us to protect our rear end. It was as convenient a place as a man could pick for a first-class, up-to-date, rear-end bump. There was a sharp curve about a quarter of a mile to our rear, and that's the reason, I suppose, the con didn't notice what I'd done.

"I thought of my new suit as I flew past the caboose, so I hopped aboard and grabbed the carpet-bag it was in; also a red blanket from the con's own bunk, for I was somewhat skeptical that there was any danger of some one not noticin' that dinky red flag unless it was a bull calf.

"I ran up the track draggin' my grip and wildly wavin' the red blanket, for

I heard 645 just beyond the curve whistlin' off brakes. Not seein' our flag, he opened her up, thinking we was gone, and was hittin' a pretty good clip as he come around the curve.

"When he rolled in sight and saw that red blanket and the caboose 'most under his nose, make out he didn't throw her over and wail for brakes! And you'd ought to see 'em commence to unload as the rest of the train come in sight.

"Engine and train-crew and about forty-seven hoboes hit the grit runnin' and legged it hotfoot for the open country like jack-rabbits

"I couldn't help laughin' when 645's fat conductor bounced like a rubber ball when he struck the ground, then got stuck plumb fast with his short legs waggin' in the right-of-way fence

"Then a bright and shinin' thought filtered into my cranium. I'd show 'em the smart guys! I'd save our caboose and the other train, too, by the simple process of keepin' 'em from comin' together. It seemed strange, I remember thinkin', that them old railroaders had never thought of a thing like that before.

"I wasn't very far from the other end of the switch our train was workin' on. Rememberin' the nice new switch-key I'd proudly received that mornin', and not havin' had a chance to use it yet, I dropped the red blanket and my brussels baggage and rushed for the switch.

"As I unlocked it and grabbed the lever to turn her I could hear the whole of our crew hollerin' like mad. There wasn't much time, so I didn't look up, but I fondly imagined them boneheads was at last givin' me credit for knowin' somethin' and was tellin' me to hurry and applaudin' the brave act.

"I got her set for the sidin' and jumped in a shower of sand as 645, with her drivers grindin' and screechin' on the reverse, took the switch, and two seconds later, with a crash that set my ears buzzin', stood up on her tender, rammed into our train, then rolled over.

"When the conductor came up, lookin' like the proprietor of a funeral, I swelled up like a poisoned pup

"'Well, cap,' says I, throwin' out my chest, 'I saved the caboose!'

"He wasn't mad a bit just sorter downcast and solemn.

"'Yes,' says he, givin' a awful moan, 'I might have knowed it. You've saved a two-dollar caboose, and'—says he, restin' his lamps on the blanket and satchel—'a fifty-cent blanket and a strip of stair-carpet with handles on it, containin' a purple suit and some oil-cloth shoes. In makin' the thrillin' rescue you've made junk of one no-account engine that only cost twenty thousand dollars and derailed another, not to mention a few triflin' thousand dollars' worth of freight and buildings and desecratin' the landscape in.'

"I was about to say somethin' to cheer him up, for I didn't see nothin' to carry on so about, when he heaved another heartrendin' sigh.

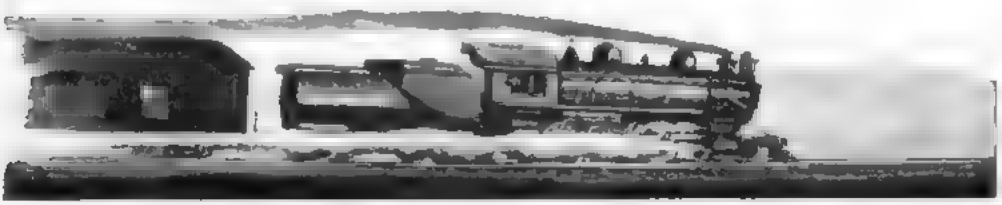
"'Don't tell me a word!' says he, clawin' his hair. 'You'll do some more damage. Save it all for the G. M. when he gathers you in his arms and promotes you to wrecker.'

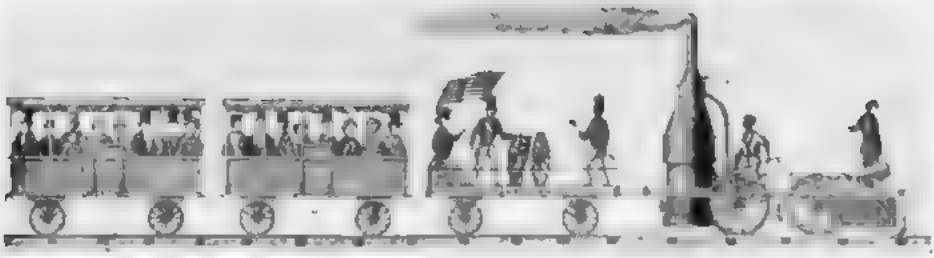
"Then he groans again, more bitter than ever, and says real gentle in a husky whisper, as he lays his tremblin' hand on my shoulder:

"'Son, I guess our railroadin' days is over. You're young. Take my advice and learn to be a salt-water sailor. You're too fresh and rough to be trusted with a gentle, harmless railroad.'

"Honest! He took it so hard that my tender young heart went out in pity I didn't care nothin' about myself—I was blamed tired of railroadin', anyhow, and about half sorry I'd learned"

The next story of the That Reminds Me Club, "When Kemp Passed Out," will be published in the July number.





THE FIRST TRAIN OVER THE SOUTH CAROLINA RAILROAD. JANUARY 15, 1831. IT WAS MADE UP OF THE ENGINE "BEST FRIEND" A BUMPER CAR, AND TWO PASSENGER COACHES.

UNCLE SAM'S RAILROAD MUSEUM

Famous Collection in Washington, D. C., Includes the Original "John Bull" and "Stourbridge Lion." They Stand on the First Rails Made in America.

BY RICHARDSON DAVENPORT.

IN what is undoubtedly the ugliest public building in Washington, the United States has one of the most magnificent collections of exhibits in the civilized world. So extensive has the collection become that a new National Museum has been built, merely to house the natural history exhibits. The new building is as beautiful as the old one is ugly.

At any time of the day the visitor will find interested persons examining the two largest exhibits in the transportation section, the locomotive John Bull and the locomotive Stourbridge Lion. These two are the only real locomotives in the museum, others being represented in model form.

The two are of unusual interest. The John Bull stands on a section of track which is made of the first steel rails rolled in America. It occupies a commanding position in the center of Transportation Hall, and excites much interest, not only among railroad men, but generally. The John Bull is the oldest complete locomotive in America, and, when length of service is considered, is certainly entitled to be called "first locomotive," although another actually has that honor.

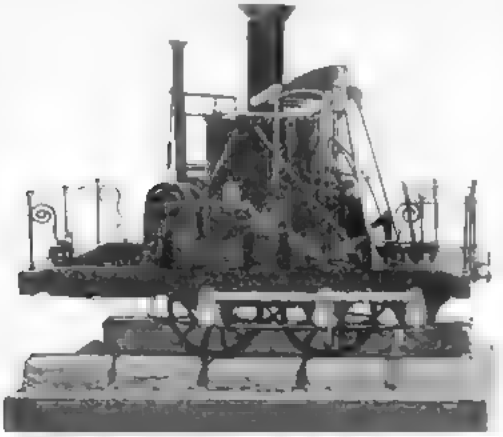
The John Bull, finished in 1831, was built by George Stephenson & Sons at Newcastle-on-Tyne, England. Designed to be engine No. 1 of the Camden and Amboy Railroad, it was shipped from Liverpool on July 14, 1831, on the Allegheny, for Philadelphia, where it was safely received. It first puffed its hesitating way along strap-rails on November 12, 1831, with Isaac Dripps at the throttle, and in the presence of the New Jersey Legislature, starting from Bordentown, New Jersey, where the railroad monument now stands.

Necessary to Add Pilot.

From this date the John Bull remained in active service until 1865, a statement which seems remarkable even when one examines the engine and wonders how it operated. Of course it has been somewhat altered and added to, but no alterations save a complete rebuilding could change its lines or construction.

The American engineers found it necessary to add a pilot. Either the

cattle in England were so well-behaved that they never strayed on the track, or they were better enclosed than in New Jersey. So a huge flat pilot was built. It was pushed ahead of the engine on a



THE "GRASSHOPPER" LOCOMOTIVE USED FOR MANY YEARS ON THE BALTIMORE AND OHIO. THE RAILROAD BUILDERS OF SEVENTY YEARS AGO CLAIMED THAT SHE WAS THE FINAL TYPE IN LOCOMOTIVE PRACTISE

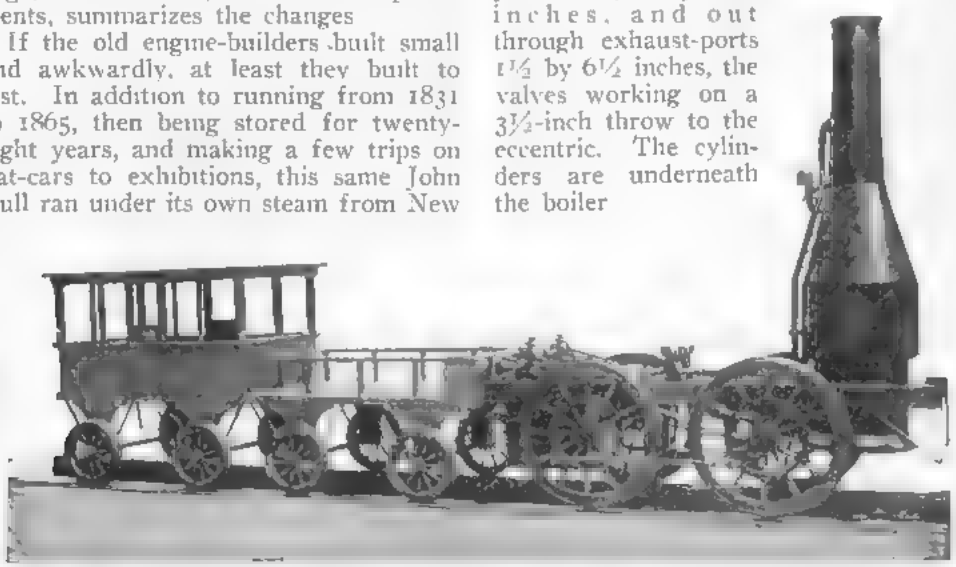
single pair of wheels, the pilot's rear-end being hung on the axle of the forward drivers.

This, the changing of the original locust wood drivers for balanced iron wheels, the addition of a modern steam-gage, whistle, etc., and some replacements, summarizes the changes

If the old engine-builders built small and awkwardly, at least they built to last. In addition to running from 1831 to 1865, then being stored for twenty-eight years, and making a few trips on flat-cars to exhibitions, this same John Bull ran under its own steam from New York to Chicago in 1893 (it is a standard-gage engine) and puffed contentedly about the Columbian Exposition grounds for many weeks, before running home again to the museum, where it has rested since December of that year.

The picture will give you a very good idea of what his old relic looks like, sitting stolidly within its railed enclosure at the museum door, but railway men will be interested to know something of its actual dimensions. As originally built, these are both interesting and quaint. It weighed, for instance, 22,425 pounds. Its boiler is 13 feet long and 3 feet 6 inches in diameter, covered with wood. Nine-inch cylinders with 20-inch stroke drove 4-feet-6-inch drivers, which had cast hubs, locust spokes, and wrought-iron tires with 1½-inch flange shrunk on as a wagon tire is shrunk on. One of these wheels is now upon the museum walls

The boiler has 62 flues, 7 feet 6 inches long, 2 inches in diameter, from which fire and smoke conveyed heat from a furnace 3 feet 7 inches by 3 feet 2 inches. The total grate-surface is slightly over 10 square feet, the fire-box surface 36 square feet, and the flues have a heating-surface of 213 square feet. The steam generated from this heating surface and boiler capacity passed through steam-ports 1⅛ by 6½ inches, and out through exhaust-ports 1½ by 6½ inches, the valves working on a 3¼-inch throw to the eccentric. The cylinders are underneath the boiler



UNCLE SAM'S MODEL OF LOCOMOTIVE "BEST FRIEND" WITH FREIGHT CAR AND PASSENGER COACH ATTACHED. THESE ARE BUILT ACCORDING TO THE EXACT MEASUREMENTS OF THE ORIGINALS

The boiler is supported on wooden beams in the engine-frame—not iron. Originally the tender was a wheeled platform carrying a water-barrel, but a more pretentious one was soon built. One of the acompanying pictures is a photograph made of this famous old train as it ran to Chicago in 1893, in which the cars are exact copies of old Camden and Amboy coaches

Near the John Bull rests all that is left of the Stourbridge Lion, another English locomotive shiped to this country, and which antedates the John Bull by a few years. The Stourbridge Lion was built in 1828 by Foster, Rastrick & Company, at Stourbridge, England. It was built to order for the Delaware and Hudson Company, which desired it to haul coal on a plane railway, with elevators at the end of each plane to raise the cars. As there were three planes, three locomotives of specified weight were ordered.

They Took a Chance.

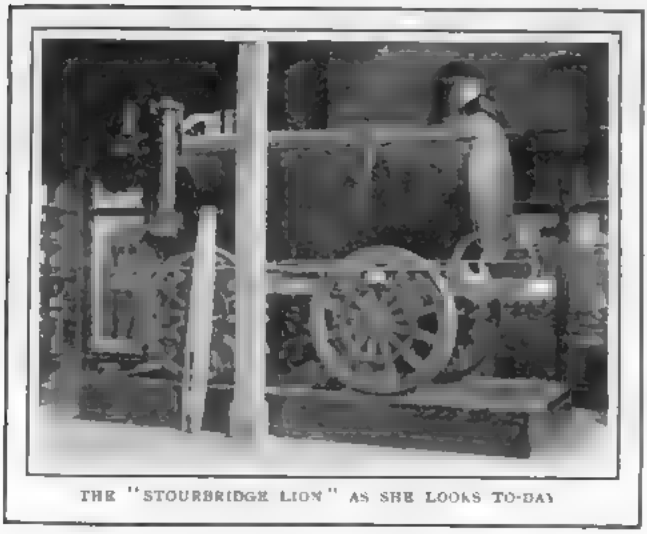
The makers objected to meeting the weight specifications.

"We don't know what it will weigh," they said. "All we can do is to build you a locomotive which we will guarantee to run and pull loaded cars on a level but what it will weigh we don't know!"

The American engineers took a chance, ordered their three locomotives, and history says that the Stourbridge Lion, on August 8, 1829, with Horatio Allen at the throttle, ran from a point near the canal basin at Honesdale, Pennsylvania, "with good speed around the curve and across the bridge and up the railway about one and one-half miles to where the railway was crossed by a common road-bridge placed too low, to admit of the passing of the loco-

ONE OF THE PRIZES OF UNCLE SAM'S COLLECTION IS THE OLD LOCOMOTIVE "JOHN BULL AND HER AMER. AN "COWCATCHER." THIS PICTURE WAS TAKEN IN 1893, WHEN THE OLD LOCOMOTIVE, WITH TWO CARS OF ANCIENT DESIGN ATTACHED, RAN UNDER HER OWN STEAM FROM PHILADELPHIA TO THE WORLD'S FAIR EXPOSITION IN CHICAGO.

Photograph by William H. Rau, Philadelphia



THE "STOURBRIDGE LION" AS SHE LOOKS TO-DAY

motive under it. Here he reversed the engine and ran it back to the place of starting, greeted by the shouting cheers of the people and the booming of cannon!"

Alas for the cheers, the shouting and cannon's roars! The Lion and its mates were all too heavy for the light track laid for them, and so they were set to one side, the track filled with dirt, and mules pulled the cars the engines had been designed to pull, just as mules always had pulled coal from the beginning of mining.

So parts of the Lion rusted away, parts were stolen, and parts were changed until, to look at her remains, one might almost think she was an exaggerated watering-cart instead of a locomotive. Drawings in old books show that the Lion was a walking-beam engine, with two upright cylinders -one cylinder remains on the Lion—and though she was built with a wooden frame, with wooden wheels which are still *in situ*, and with only a singly divided flue under her boiler, she was strong and sturdy.

There is something pathetic in this wreck of what was once the foremost engine of its day, and one looks in vain at its little dimensions; its wooden drivers, which are not as large as many a bogie wheel to-day; its boiler, which would hardly make a respectable air-tank on a Pullman; its cylinder, which is so little bigger than a modern whistle, for a prophecy of those huge masses of weight and mechanism which now annihilate distance for us

What must that early track have been that this engine—which could not have weighed ten tons was too heavy? It was made of wooden rails with strap-iron in seven-foot lengths on top. They were fond of wood in those days wooden rails, wooden wheels, wooden frames for their engines, wood connecting-rods, even wooden couplings, albeit they were bound with strap-iron!

It is a relief to turn from this melancholy relic to the Best Friend. To be sure, we can only see it here as a model, but then, it is a model faithfully true to life.

The Best Friend was the first locomotive built for actual service on an American railroad. Experiments had been made before and experimental engines had been run on experimental tracks before, but the Best Friend was the very first American engine.

Early Cast-Iron Frog.

This engine ran on the South Carolina Railroad, a line chartered in 1827, begun in 1830, and finished in 1833. When it was finished, it ran from Augusta, Georgia, to Charleston, South Carolina, a distance of 135 miles. At that time it was the longest railway in the world.

The first effort of American engine builders was hardly a prediction of what was to come later. Its upright boiler, its diagonally mounted cylinders, its wooden frame, do not even suggest the mogul of to-day. Nor can it be understood why they placed the boiler so far from the cylinders, building the engine backward, as it seems. However, the Best Friend fulfilled all expectations. She was constructed in the West Point Foundry Shops, in New York, sent to Charleston by sea, *via* sailing vessel Niagara, and on January 15, 1831, the anniversary of the commencement of the road, made her first excursion trip.

Among the interesting things in the museum is a photograph which Mr. Maynard, the curator of the transportation exhibits, showed to the writer. It is a copy of a picture of the Best Friend on its first excursion. The curious will note that the picture is entirely in silhouette, and has no perspective. This is accounted for by its having been drawn by a silhouette artist, who became so much interested in his work of drawing engines, cars, and passengers for sale, that he finally gave over artistry as a profession and wrote a book about rail roads and first engines.

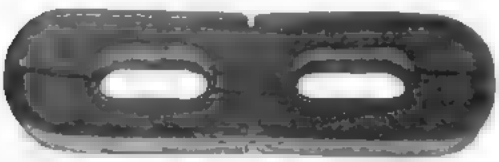
Not the least interesting thing about the model of the Best Friend is its track —wooden rails, strap-iron tops and stringers supported on piles. Engines and cars are not the only railway things which have evoluted in the past eighty years. One has only to turn to the cases showing rails and rail sections, which Mr. Maynard was careful to explain does not contain anything like a complete collection, to see what has happened.

As engines grew larger, rails grew larger. As rails grew larger, they changed their shapes, their material, the method of joining them. In these cases are literally hundreds of rail sections, from the first strap-iron rail down to the most modern of heavy steel-rolled rails, and with many a sawed cross section example of rail-joint, shoe, and tie-plate.

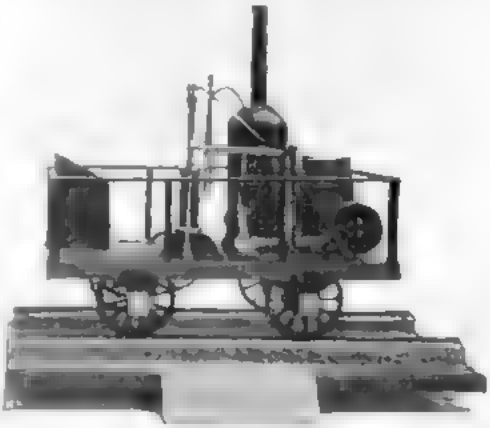
There are, too, many cast-iron rail-fittings, curious relics. Of these, a cast-iron railway frog, from Pennsylvania, is perhaps the most remarkable. This frog does not show any breaks or sign of strain, and when one remembers that this frog of brittle cast-iron sustained thousands of wheels at thirty and forty miles an hour, one wonders how the train escaped unwrecked.

Had trains or engines weighed then what they do now, the frog might as well have been of glass as of cast-iron. That even at a good speed the iron frog did not break is evidence of what we have done in the way of adding weight to our trains since about 1845, to which this frog dates back.

Returning to the model cases, there is one of the Stevens locomotive, the first one actually built in America, although it was never anything but an experiment or used for other than experimental purposes. It was built in 1825 by John Stevens, and ran on a circular track at Hoboken, New Jersey. It is a rack-rail engine, with a double-spur gear, and a stout barrel for water.



ONE OF THE FIRST COUPLERS. IT IS MADE OF WOOD AND RIMMED WITH IRON.

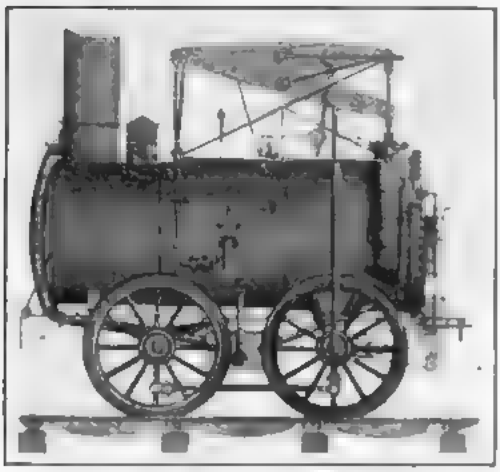


THE LOCOMOTIVE "TOM THUMB," BUILT IN 1829, DESIGNED AND CONSTRUCTED BY PETER COOPER FOR THE B & O. SHE HAULED A CAR CARRYING TWENTY-FOUR PASSENGERS A DISTANCE OF THIRTEEN MILES IN SEVENTY-TWO MINUTES. HER BOILER TUBES WERE OLD GUN BARRELS.

In the model, the inside of the tubular boiler has been removed and stands by the shell. This is done because this is the first tubular boiler built in America.

In a glass case in a corner stands this tubular boiler, presented to the museum by that Stevens Institute of which John Stevens was the founder.

To look at this small affair of fifteen or twenty tubes, their clumsy cast-iron headings, and realize that a man can lift and shoulder the whole without too great an effort, to see the wagon-wheeled locomotive which this tubular boiler sent about its circular track, and then to look at a modern engine, with its thousands of feet of tubes and its huge size and speed, and finally to think that all this has happened in less than a century, is



THE "STOURBRIDGE LION," WITH HER ORIGINAL EQUIPMENT OF WALKING BEAMS, BEFORE SHE WAS REBUILT FOR AMERICAN SERVICE.

indeed to wonder at the marvels of steam and of railroads and locomotives and cars and air-brakes, and at the men who did it all.

The collection does not pretend to show a model of every variety of locomotive made in America during the development period when manufacturers were searching for types. It would require many hundreds of models, the museum has but ten to show that. But all the epoch-marking locomotives are shown in model form, and here you can see more varieties and kinds of self-moving steam-engines than you ever thought possible.

Many Cranks Meant Progress.

There is the Tom Thumb, for instance, the pet engine of that Peter Cooper who left so powerful an impress on railroading. The Tom Thumb was built by Cooper at Baltimore, in 1829, and tested on the then new road, the Baltimore and Ohio. When first tried it drew a car with twenty four passengers a distance of thirteen miles in seventy-two minutes and returned in fifty-seven minutes. Considering that the Tom Thumb was an upright, stationary engine, with spur-gears to the axles of the drivers, this was "going some."

The Baltimore and Ohio was a progressive road, and it was not long before it was introducing new designs. Prominent among these was the famous Grasshopper locomotive, used on that road for many years and thought by many railway men of that age to be the final type of locomotive. The model shows it to be of an upright boiler, with upright cylinders and two walking-beams with which the pistons kicked at the connecting-rods, spur-geared to a main driving-shaft. This, in turn, was again cranked and connected to the drivers.

In the early days, complication of mechanism and added wheels, cranks, rods, beams, *et cetera*, was considered an indication of progress and up-to-date design, so that often weird and strange combinations of levers and wheels took the road as the "latest locomotive." The strange little Puffing Billy, with its grasshopper arms, is a fair example of good invention gone wrong, and the model which shows its complications is always a source of interest.

There are also models of the Stourbridge Lion, made from drawings, of the Rocket of 1829, of the Richard Trevethick of 1804, with a huge fly-wheel, which pulled trains of coal on mule-tracks in Cornwall, England; of Murdock's locomotive of 1784, which is one boiler, one cylinder, one crank, and one walking-beam without any complications of gears or levers or safety-valves, made in Birmingham, England, to prove the efficacy of high-pressure steam; of Isaac Newton's engine of 1680, showing the power of reaction of a jet of steam against air to move a carriage; and of Hero's steam engine of 150 B.C., showing how the same steam reaction could compel revolution.

There is a beautiful model of Old Ironsides, Mathias Baldwin's engine, first in the passenger-service in Pennsylvania in 1832; a model of the Sandusky, of 1837; and perhaps the most curious of all, a model of the famous "Flying Dutchman," that treadmill locomotive in which a horse worked a treadmill to pull a train.

But there is much of interest to be seen besides the models. Fancy a locomotive wheel with bicycle spokes. Yet here is one with very much that plan of construction. It is one of the original driving-wheels of the De Witt Clinton of 1831. It has round spokes, apparent-

ly solid bars of iron, extending from side to side, and a wide, flat tire or rim. Under it hangs a modern development, a paper car-wheel with steel tires and sides, such as was first introduced in 1888.

One of the original drivers of John Bull is to be seen, together with a wooden car-wheel of 1831, from the New Jersey Railroad. There are two Russian car-wheels, one of wood and one of steel, sent here by Russia in 1876 for the exposition, and looking very much as if they belong to 1831.

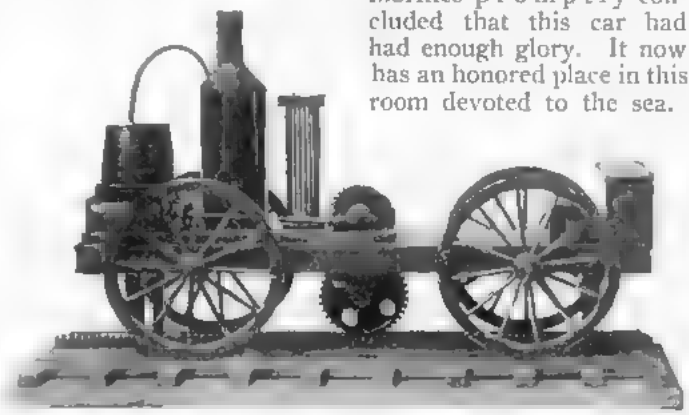
Leading off to the right from the exhibition room in which are the locomotives, the models, the car-wheels, and the rails, is a hall where hangs now an ancient example of a very modern transportation problem indeed, the Wright aeroplane, which was bought by the government in 1909. It is not the original Wright aeroplane, because that was destroyed when Lieutenant Selfridge, the first man to die in an aeroplane, met his death in the fall of 1908.

In 1909, however, Orville Wright came back, his bones mended, his nerve as calm as ever, and made the first cross-country flight ever made in this country in an aeroplane. Here hangs the machine with which he did it. Not far from it is an exhibit of fifteen large photographs made by the writer, showing the Fort Myer flights.

Even more interesting than the Wright exhibit is the collection of Langley—the real American primogenitor of aeroplanes. There are three of the models, as well as parts of the full-sized machine, which never flew, but which experts say could have flown had Langley but known how to fly. Among them is the Langley engine, a model even to-day of beautiful engine work and of great power for weight, as there are less than five pounds to each horse-power.

Retracing one's steps and turning to the left instead of the right, is a beautiful hall filled with exhibits concerning the history of transportation at sea. For instance, here stands, forever at rest, that corrugated iron life-car prototype of all those which have done such yeoman service in the United States Life-Saving Service

When first used in 1850, it saved two hundred lives from the ill-fated Ayrshire, when all other means had failed. The untried device succeeded where everything else had failed, and the authorities promptly concluded that this car had had enough glory. It now has an honored place in this room devoted to the sea.



THIS ENGINE, BUILT BY JOHN STEVENS IN 1825, WAS EQUIPPED WITH THE FIRST TUBULAR BOILER MANUFACTURED IN AMERICA SHE CARRIED HER WATER IN A WOODEN BARREL.

Here, too, are some exquisite pieces of model work in the small warships presented to the museum by the Navy Department, among them such departed glories as the dynamite cruiser Vesuvius, the double-turreted monitors Miantonomoh and Monterey, and the armored ram Katahdin. The collection of large models of sailing vessels, many of them several feet long, delights the hearts of the boys from six to sixty. The curious boats of the world which line cases and wall, show the offshoots of invention from the war canoe of the Indians, made by the dugout method, to a Peruvian boat made of twisted ropes of grass

There is a beautiful model of the Clermont, with its bricked-up boiler, the first steering-gear ever used at sea; models of all the famous first steamships, including the side-wheeler Savannah, first to cross the ocean, Savannah, Georgia, to Liverpool, in 1819, and what is left of John Stevens's first marine engine, with its quaint cast-iron gear-wheels.

McPheely's Flat-Wheeler.

BY ROBERT FULKERSON HOFFMAN.

The Boys Give Some Little Assistance Switched Out With Some Small Advice.

McPHEELY'S grimy yellow way-car curved off easily from the long tangent of main line and followed the slow lead of its mixed freight-train into the side-track. A last rippling of slack couplings ran its noisy length of the brown train and then the whole came to its measured stop.

In all the pressing silence of that vast new green bowl of the upper mountains no sound disturbed the clean calm of it, save for the quick clang of a closing switch lock and the muffled throbbing of a pump far up ahead.

High in the blue above, a pair of vultures wheeled on motionless wings and cocked their keen eyes curiously at Hawk, the running flagman hastening from the switch and toward breakfast long deferred in the way-car. The side door next the main line swung inward and McPheely's searching face appeared. The teasing smell of frying ham and eggs welled past him through the open door and drifted keenly up along the train.

"Come on!" he beckoned prodigally to hurrying Hawk. "Chuck's ripe! Where's Bat, the noble middle man? See him coming over the top anywheres?" And, turning his eyes along the train, he muttered, "Well, I'll be swiped!"

From off the truss-rods under the third car ahead, a pair of run-down shoes was backing uncertainly out into the air. A pair of gangly, ill-clad legs was uncertainly following. And when the long and crumpled body of the tramp clumsily fell clear while scrambling down over ballast to the ditch, Hawk caught up a chunk of ballast as he ran, and shouted, "Nail him, Mac! Nail the piker! He didn't ride with me!"

But McPheely did not "nail him." He stood in the doorway and glared. The tramp neither cowered nor ran. Instead, he came shuffling boldly toward them and the very effrontery of it held the rock in Hawk's uplifted hand suspended ready for its heavy drive. And when the fellow stood hunched below the way-car door and spoke, sheer amazement loosed the grip of Hawk's hand and the chunk of rock fell clattering back to the ballast.

"Say, mister," the tramp launched forth in the glib and husky whisper of South Clark Street, "mister, would you please be so kind as to give me a little assistance? I ain't had nothing to eat for most two days and I'm starving.

"I'm a honest working man, same as youse, but I got hurted workin' in the steam laundry over here at Pa , Pal—"

"Paloma!" prompted McPheely from the doorway. "Paloma. T'other side of the mountain, eh?"

"Yes, Palomer, that's it. I got scalded in an explosion over there an' I had to quit. But I'm lookin' fer work. Le' me show you this here arm o' mine. It's a bad one, but I'll git well."

"Paloma, eh?" queried Hawk, drawing closer. "Le's see it!" And McPheely looked coldly down.

"It's bad," said the tramp more hopefully, "but I guess youse fellows is used to seein' hard sights. There it is!" he finished proudly, as his upturned

sleeve revealed a carefully guarded blister quaking loosely and large upon his extended wrist. "But I'll git well, and you bet I'm huntin' work!"

Hawk's eyes fastened thoughtfully upon the quaking blister. His hand went groping rather aimlessly up to a clinch upon his old gray felt hat brim. He lifted it and rapidly curried his two free fingers back and forth across his tangled red hair, and then he struck a swift descending blow and burst the blister with his hat

"You're a liar!" he said. "There ain't a steam laundry this side of the big divide, short of Balceta. Mexicans does our washing.

"Where you from? D'je think you can run off one o' them old creosote bulges on us? How far d'je ride? For the bat of an eye, I'll—"

"Ch'cago!" gritted the tramp still looking ruefully at his damaged stock in trade, "Ch'cago!" he repeated, thrusting out his lower jaw, "an' if I had you in old Twelft' Street right now, you wouldn't wait fer no eye battin'. You'd git it an' git it quick!"

Hawk's hat clapped back suddenly upon his head. His shoulders hunched ominously and his blue eyes blazed wrath, when around the rear end swung Bat, "the noble middle man."

"What's the chaw bacon givin' you, Hawk?" he laughed raspingly. "Why don't you plug him, huh? Want me to lift him one, huh? Step back a mite, Hawk, an le' me swing on him!" he pleaded, unslinging a pick handle from under his arm.

"It's me first trip out," said the tramp with ready shiftiness and cringing, "and I gotta find work!

"Say, mister," he turned in appeal to McPheely above, "will you please be s'kind as to—"

"Let him alone!" spoke McPheely suddenly.

To Hawk and Bat, that did not sound by the usual card. They stared at McPheely and dropped back in silence. The whole plaint of the tramp hissed with the shiftless shuffle of slums and reeked with the stench of Chicago's muck. But the good smell of coffee and breakfast was just then having its way in that clear upper air and McPheely's heart had surprised him by softening.

"Let him alone for a spell," he said. "I'll take his case.

"You!" he said, glaring down fiercely at the tramp. "Did you ever take a *habeas corpus* before?"

"Who, me?" exclaimed the tramp. "Me? I never touched it! I wasn't on this here train, only from just over that first hill there. I never done it!"

"Well, you've done it now," said McPheely very soberly, "or I've done it for you. And if I hadn't, you'd be, right now, what the old alcalde at Balceta calls the '*corpus delicts*.' You'd sure be the body o' this crime, for these huskies of mine would 'a' licked the everlasting whey out of you in just about two seconds more.

"Catch on? We ain't got much time to fool away on you, but we're stabbed here for just about thirty minutes, and you're on; strictly on. You'll get well! You bet you will! And you've found work. And you're going to get breakfast and a little assistance."

"Aw, hell, Mac!" said Hawk and Bat in concert. "What you doing, anyhow?"

"See them buzzards up there, you?" continued McPheely undisturbed. "They ain't after us! They see us about every day and don't mind a little bit. They're after you! They've tracked you clean over the mountain without calling out the dogs, and it must have been easy dead easy!

"See that water hole over there in the new-grass? G'wan over and strip. Take off all you've got, and hurry. Wash! Here's a chunk of soap," he said, reaching inside the doorway. "Wash good and come back for your breakfast. If you run, I'll hop out and catch you and lick the life half out of you. You're in the hands of your friends

"Come on, you fellows," he beckoned to the brakemen, half sullen, half grinning, "let's eat!"

"You ain't going to let him in, are you Mac," said Hawk doubtfully while climbing up.

"Sure's you're born," nodded McPheely, "unless you fellows vote me square down. Let's shanghai the duffer and put him against a square chance to work and eat. If he's got it in him, we'll get him a paying job at Villa Rica, in the roundhouse, wiping."

"It'll make a muss if we hold him and it gets out," said Bat. "Aw, we couldn't hold him, anyhow. What you talking about, Mac?"

"What muss will it make?" demanded McPheely. "We'll just scare him so bad he won't dare run till we tell him and we'll treat him square."

Gradually, they came round to McPheely's notion while they ate, and when the fellow returned, shining with soap and the ill concealed gleam of very real hunger, they "nailed him" by taking him in and feeding him to the full on a savory breakfast.

They "scared" him with the curdling horrors of things dire but unknown to his slum lore, some very real, some very far from that. And when the freight went on its way, "Corpus" was duly installed at the rear of the tender, shoveling down coal for the hungry maw of the plodding engine.

That night he scoured and filled "lamps" in the way-car while it lay in the comparative quiet of Del Sur yards. He slept there, and for six days and nights following he worked and slept as he was bidden or driven to it.

Once, within that time, he leaped suddenly and caught the handirons of another passing freight. Ready hands dragged him down and restored him to his own train. Once he fled through the night in Del Sur yards and came suddenly abreast of a dark figure looming out of the blackness with uplifted club. "G'wan back!" it said. And he went back.

Quickly and quietly, the main scheme of McPheely's "wild break" had come to be understood at the two terminals and upon the line—everywhere save closest to the official ear—as little matters have a way of doing, and "Corpus" had come to understand that he was firmly in the grip of a broad seeming parole, strangely yielding, strangely firm. That is to say, the boys were "on" and making it a sort of point of honor for McPheely's sake not to let the cordon fail at any point because of them.

Then came a Sunday morning, when the vigilant and many eyed guard relaxed. "Corpus" emerged tentatively from McPheely's deserted way-car lying quietly in Villa Rica yards. He slunk, lonely and forsaken, among cuts and lines of standing freight-cars until he reached the open main line.

He scanned the yard for trains about to leave. There were none. He looked furtively both ways of the main line. Nothing loomed in sight. He glanced across the village slumbering peacefully in the morning sun, and up to the sheltering crags towering just beyond. And then he ran! Ran like a man fleeing from imminent death pursuing. Ran and climbed until he sat breathlessly looking down upon the gleaming rails in the yards, the regular and uninteresting squares of the streets, the cottages squatting in emotionless peace, and the roundhouse sending up its lazy columns of smoke from preparatory fires.

He was free, at length, and he would hide high, there, until sure chance helped him to flee safely back along the way by which he first had come reeking from the distant slums. And then the aching, pleading sweetness of a church bell came quavering up to where he sat. Something stirred within him.

He looked again as through eyes wholly new upon the drowsing village. Dimly, he had a mental picture of that clean and quiet life which he knew must be stirring there beneath the unpretentious roofs. He wanted something, wanted home, wanted back into the car of which McPheely and his "huskies" had made for him a jail. He wanted—to be a man.

He straightened slowly from his crouching and took his way steadily down the hill. He crossed straight to the roundhouse door and entered.

"Say, mister," he said without preliminary to the man who stood anxiously scanning the call-board. "Mister, would you please be s'— Say, can you gimme a man's job? I need it."

The foreman turned and leaned across the slim iron railing. "Who are you?" he asked. "What can you do? Le's see your papers!"

Then a look of sudden recognition came into his eyes and he laughed.

"Never mind," he said. "I guess I know about you, if you're the fellow I think you are. You better get back to your hole in McPheely's way-car, or I'll have to report you.

"You're McPheely's 'Corpus,' ain't you?"

"Well," said the tramp, "mebbe I am. That's what these damn jays has been calling me, but they've monkeyed me far enough. I gotta have a payin' job. You got it for me?"

Somehow, the foreman liked it. "Wouldn't go wiping, I suppose," he quietly remarked

"Sure, I'd go wipin'! I'd go *anything* that's got a taste o' real man life in it—and decent wages. Gimme it, will you? I'll make good."

"I'll just go you at a venture, boy," said the foreman very seriously, "and if you break, I'll hand you back to McPheely. Your pay is one-fifty till you're worth more. You're a green wiper, and your name is H. Corpus till you can put up a better one. Get your coat off."

McPheely and his "hussies" hear I of it. The news spread to every erstwhile vigilante self-appointed as guardian of the tramp. They came, singly and together, and slapped him on the back and said in widely variant nomenclature: "Go to it, Corpus! Bully for you! You're sure on right!"

That day and the next, Corpus "went to it." On the morning of the third day, McPheely, returning sleepily from a finished night run, came out of his way across the yards to look into the roundhouse. He nodded drowsily to the foreman standing just within the door, and glanced searchingly along the line of pits.

"Where's Corpus?" he asked

"He's running," replied the foreman. "Running east out of Villa Rica. I guess you fellows didn't know exactly what you picked up when you got that fellow, did you? Eh?"

"Aw, switch it, switch that, Crocker," growled McPheely. "I'm sleepy as a Mexican. I'm half dead for sleep! Where is he? I just want to chirk him up a mite before I roll in."

"He's running, I tell you," insisted the foreman; "running east out of Villa Rica."

"Running *what?*" demanded McPheely. "What's he on? I ain't got no more time to stand here guessing about the darned cuss! What's he on?"

"On a bet with himself, near as I could make out," said Crocker. "He's running a foot-race up through that east pass by now, if he kept going, and he sure looked as if he meant to.

"The worthless cuss come out here this morning, fired up and foaming, priming with good intentions, same as the other two mornings. He was working that eager and wide open that there was water sputtering from his stack and dripping from his jacket.

"There seemed to be only one dry thing about him and that's his mouth. Course I been sizing him up pretty close since I let him in and, while I was standing over yonder back of an engine sort of watching him settle to the job, he commenced licking his dry chops and looking around sly and anxious.

"I didn't think so much about that, but, all at once, he chucked his bunch of waste into the pit, kicked his little old hand-box in after it and let out a yell like a Mescalero Apache.

"He made a straight break out of the door and took on the long lope that makes distance and makes it good. He's aimed for the east pass, Mac, last time I saw him, and going good; mighty good. The Limited can't begin to make that kind of a getaway up the east grade.

"The high brush has got him, Mac. What you bothering about it for? They're no good!"

"They're a flat-wheel bunch! In every string of fifty of 'em you'll cert'ny find that forty-nine, mebbe fifty, of 'em's flat wheelers needing heavy repairs.

"There ain't a rip-track on earth that's got the tools to rebuild 'em and make 'em any good for this job."

Thus spake McPheely as he turned away, and his voice was the voice of that big, clean body of the railroad service which is "faithful unto death."

DUDLEY, FATHER OF THE MILE-A-MINUTE FLIER.

After Years of Experiment and Study, New York Central's Engineering Expert Invented the Track Indicator and Designed the Powerful Rails that Make High Speed Possible.

BY T. D. DAY.

TIME is the essence of railroading. The growth of our big systems, the development of equipment has produced an era of expediency. Our railroads save minutes, hours, days that is their great service to our busy nation. The passenger-service is the finest in the world. Fine American initiative and invention have made this possible, and among the men whose genius has been a force in this evolution, Plimmon H. Dudley stands famous as the father of the modern mile a minute train.

Mr. Dudley was born in Freedom, Ohio, May 21, 1843. He was the son of Charles and Sarah Dudley. He received his first education in the schools of his native town. Later he went to Hiram College. James A. Garfield was then a professor in that institution.

Young Dudley was not a remarkable mathematician, but he realized that a thorough knowledge of mathematics was necessary to success in civil and mechanical engineering which he had decided to follow. He literally dug his way through mathematics.

Now and then he would flounder, and Professor Garfield would sit with him hour after hour and show him the path through abstruse problems. Dudley and the man who later was to be President of the United States were close friends.

Mr. Dudley graduated from Hiram College, and prizes his degree of Ph.D. conferred on him. From 1868 to 1872 he was the chief engineer of the city of Akron, Ohio. In 1871 he married Lucy May Bronson. A year later he became chief engineer of the Valley Railroad. There he continued for some time. Later he came to New York and entered the engineering department of the New York Central Railroad.

Indicator Never Has Been Improved.

In 1880 one of the most serious problems that ever confronted American railroads imperatively demanded a solution. The cost of maintenance and operation had to be reduced and the capacity of the roads had to be increased to meet the growth of the country. More than thirty years ago Mr. Dudley was regarded as one of the greatest experts in the United States. He was commissioned to solve the problem.

He succeeded, because he went into the matter with extraordinary thoroughness. He dug his way into the very heart of the problem. He proved absolutely every step.

The track itself was the foundation. It was not difficult to build heavier engines and larger cars, thus increasing the capacity of the roads in that way, but the tracks would not stand the heavier loads. The first step to make the tracks safer and more efficient—before Mr. Dudley began to study the subject — was to increase the section forces and use more ballast. This did not mend matters. Rails would not stay

straight under heavy traffic, and the depressions at the ends of the rails caused rough riding.

When they asked Mr. Dudley what remedy he had to suggest, he replied that he could say nothing until he had given the matter close study. It might require six months or six years.

In 1879, after pondering the stupendous problem, he invented his famous track - indicator and commenced his investigations. This apparatus never has been improved or superseded. Placed in a moving car, it records by ever-flowing pens on paper every irregularity, however slight, in the track over which it passes. He and his car were incessantly at work trying to disclose the secret of the tracks.

DR. PLIMMON H. DUDLEY, CONSULTING ENGINEER IN RAILS, TIES, AND STRUCTURAL STEEL, NEW YORK CENTRAL LINES.

Photograph by Somers.

Inspections of the track showed that in all cases the rails had taken definite forms of "permanent set," that is, the pounding of the wheels had bent the rails downward, especially at the ends, and that they did not spring back to their original lines. The indicator showed conclusively where the irregularities were to be found.

The permanent sets were of three different and distinct types. One form was lowness at the joints and highness in the center. In another the rails were low in the joints and at the centers, and high in the quarters. The third form included rails that were more or less wavy along the entire surface. Combinations of permanent set were found on many rails

The track-indicator summed up these undulations into feet and inches, from which the amounts per mile and section were tabulated. This afforded the first definite basis of work. The undulations, in 1881, on the New York Central and Boston and Albany averaged 8½ feet per mile, though there were some miles of 12½ feet and others as low as 5 feet on new rails. To-day, under doubled wheel-loads and trebled tonnage, the average undulation is about three feet per mile.

The usual driving-wheel axle-load in 1881 was 30,000 pounds, though a few locomotives of 31,000 pounds had been constructed for the express-trains. In 1889, in a single 8-wheel engine, this was increased to 40,000 pounds, to run on the 5-inch 80-pound rails. In 1899 the driving-wheel axle-loads were raised to 50,000 pounds, and before 1911 to about 60,000 pounds.

Mr Dudley, after an examination of many thousands of miles, decided that it was imperative to augment the stiffness of the rails to enable them to distribute a larger proportion of the passing wheel-load to the wheel spacing. The rails should be higher and heavier.

At that time the heaviest rails weighed 65 pounds to the yard, and were 4½ inches high. Mr. Dudley designed the first 5-inch 80-pound steel rail ever used. He broadened its upper surface and distributed the metal in such a way that the stiffness of the section was increased sixty-six per cent. Even before the first rail was rolled, Mr. Dudley stated exactly how much track undulations would be reduced by its use.

There was much objection to these 5-inch 80-pound rails at first. Experts on track said it would be difficult to prevent these high rails from "rolling out" on curves, that the outward pressure of the train would exert a push that the spikes would not withstand. Mr. Dudley explained that the broadened head of the rail would help to hold the rails in position under the passing load, instead of depending entirely on the spikes. This is barely an outline of a principle that he discovered. It is now one of the most important and completely accepted facts in track construction.

Designed Stiffer Rail Sections.

He designed stiffer and heavier rail sections after the demonstration and experience with the first 5-inch 80-pound rail on the New York Central. The value of stiffness was shown to be so necessary that the Dudley section came into use quickly on a number of roads. A little later the height of the 80-pound rail was increased to 5⅛ inches.

In 1892, after Mr. Dudley's design, the first 6-inch 100-pound rails were rolled. It was the stiffest section, at that time, that ever had been used, and its practical advantages were shown at once by a marked reduction not only in the undulations of the track, but in the diminished abrasion of the crossties underneath the rail-seats. In 1889 William Buchanan designed the first 100-ton locomotive with 40 tons on two pairs of drivers.

The Empire State Express was one of the fruits of Mr. Dudley's labors. It was inaugurated in November, 1891, and demonstrated that on smooth tracks high-speed trains could be run with schedules averaging 54 miles an hour, while the speed would be more than a mile a minute for a long portion of the run

The daily performance of this train of 250 or 300 tons was so astonishing that it was not fully credited abroad until railroad officials visited this country. To-day trains of double that weight are run on the same schedules. The wheel-loads and trains which have been developed as the result of Mr. Dudley's work have revolutionized transportation.

The percentage of destructive wheel-effects on the rails has been reduced more than one-half. The former 20,000-pound capacity freight-cars have been replaced by those of 60,000, 80,000, and 100,000 pounds capacity. The 60,000-pound is the light car of to-day, and the 100,000-pound is the standard for mineral traffic. The freight train-load has increased from 500 and 600 tons to 3,000 and 4,000 tons, and the volume of traffic in like ratio.

The axle-loads under freight-locomotives have risen from 25,000 to 50,000 pounds, and in the passenger-service 60,000 pounds are common on locomotives for heavy, high-speed trains. The expended tractive-effort has increased from 500 to 1,200 or more horse power. Bridges that three decades ago were strong, had to be replaced by those of more than double capacity to handle the enormous development in traffic.

But Mr. Dudley did not stop with the invention of his famous track indicator and the rail. He invented the stemmatograph, an instrument which shows the mean unit fiber stresses in the base of the rail, in pounds, under the different sets of wheels of a locomotive and tender. It is the only instrument that ever has been invented for these calculations. It measures the compression in front of the forward truck-wheel, the tension under it, and even the compression between the front and rear truck-wheels while the engine is in motion. It does the same with the other wheels.

Stemmatograph tests have enabled comparisons to be made between the stresses produced by different types of locomotives. It has been of enormous aid in designing locomotives so that their weight will be more evenly distributed by correct wheel spacing and the strain in the track reduced to a minimum. It has thrown new light on the study of wheels and their defects, and the relation of wheels to rail breakages.

The Dudley track-indicator and stemmatograph, although they have been in use for many years, seem to fill every modern requirement still. They are so complete that it would be almost impossible to improve them.

Mr. Dudley's researches of late years have been confined to a great extent to the improvement of the quality of rail

steel. He is working with the same minute thoroughness that characterizes everything he undertakes. Up to 1898 all the Dudley rails were rolled from steel made by the Bessemer process. The specifications called for a limit of phosphorus content of steel to .06 per cent, for increasing the carbon to .60 or .65 for the heavier sections, and from 12 to 16 per cent ductility.

In 1898 the available low phosphorus iron-ores became exhausted in the East, and this has brought about the use of rails made by the open-hearth process.

The problem in the manufacture of rails for high-speed trains at the present time is to obtain a higher average purity, toughness, and ductility for the metal than was required fifteen and twenty years ago. It is as great a problem as that which Mr. Dudley solved with his track indicator and rail. Looking at it in a fanciful as well as a practical way, his task is to take pig-iron and so manipulate it with his chemicals that it will furnish the perfect material for the steel rail

Figuratively, he is doing this in perfecting the steel that goes into the rails. If it were not for the troublesome impurities of steel, the work would be comparatively easy. Purification is necessary to perfection. He has found this purifying agent in ferro-titanium, which is described scientifically as a "subsidiary deoxodizer." It reduces a great percentage of the oxides of iron in the steel It also reduces a portion of the nitrogen, which decreases the brittleness. It also gives more uniform ductility to the metal.

It has required years of patient toil to do this. In Mr Dudley's office are thousands of reports of tests of rails in process of manufacture and finished rails in actual service. The present specifications for the chemical composition of the basic open-hearth rails used by the New York Central lines are as follows:

	80-pound	90-pound	100 and 105-pound
Carbon.....	.55 to .68	.60 to .73	.62 to .75
Manganese ..	.70 to 1.00	.70 to 1.00	.70 to 1.00
Silicon.....	.10 to .20	.10 to .20	.10 to .20
Phosphorus not exceeding	.04	.04	.04

Three drop and ductility tests are made from each ingot of steel before it is rolled. These tests are made with the steel at different degrees of temperature. One test is made with the steel chilled to 40 degrees below zero, so as to guard against breakages during the severest winter weather. The breaking of rails, even under the hardest conditions of cold and heavy service, has decreased. The present average is one rail in about 10,000.

Mr. Dudley has been deeply studying wheels and tires. The wheels are normally the only contacts with the rails, and it is of the highest importance that their treads should remain perfect for as long a period of service as possible. A wheel that becomes worn in one spot by the brakes, even in a minute degree, becomes increasingly dangerous. A 36-inch wheel makes 560.2 revolutions per mile, and to carry a static load of five tons the repetitions upon the metal of the tread of the tires are equivalent to 2,801.2 tons per mile.

Have Reached Maximum Speed.

"To run from New York to Chicago," says Mr. Dudley in a treatise on the subject, "including switching at terminals, the distance is 970 miles. Multiplied by the static tons per mile, this equals 2,718,164 wheel-ton miles for the trip, exclusive of generated wheel-effects. The 960 miles between terminals would be run in 18 hours and apply more static tonnage to the metal of the tread of the wheels than would be carried by most rails in two or three months. The 36-inch wheels would make more than 544,000 revolutions for the trip, and the repetitions of the loads would average over 9.3 times per second for most of the run; practically continuous work upon the metal for the trip. A Pullman wheel, carrying a static load of 7½ tons from New York to Chicago, would accumulate a total of 4,075,455 ton-miles."

Mr. Dudley was asked the prospect for faster, heavier trains.

"For the present," he said, "I think we cannot well go beyond our maximum in speed. Still heavier rail sections would be needed, and this would necessitate rebuilding the rail mills. We have not yet solved the problem of the complete purification of steel, although

we have made great progress. We cannot anticipate, though, what may be the needs of the future

"We are working to find a wheel that is tough enough to wear uniformly for its entire circumference. Wheels fail in a portion of their circumference owing to some slight irregularity in their fabrication. The brake problem is a very large one. A high-speed train running with heavy cars travels at the rate of 75 or 80 miles an hour on a 55 or 56-mile-an-hour schedule. The braking problem increases with the speed and weight of the train. The wheels have to resist all that.

"For further increase in speed we must bring a number of things to higher standards. There is not so much demand for high speeds now as there is for smooth roads and safety and reliability — for speed that can be maintained hour after hour and bring in the trains punctually without accident."

BLIZZARD MAKES ROOM FOR BRUIN.

Stalled on Mountainside by Snow, Passengers and Crew Struggled Six Miles to Safety, but Bear Found Engine-Cab Comfortable.

BY A. U. MAYFIELD.

A PASSENGER-TRAIN on the Moffat Railroad, which runs out of Denver, Colorado, and terminates in the heart of the Rocky Mountains two hundred miles to the west, ran into a raging blizzard when nearing the summit at Rollins Pass. The train had run from Arrow, a small logging-camp in the pines, twelve miles over the divide on the western slope, and carried fourteen people, including the crew

Blizzards in that region of the Rockies are not infrequent, and sometimes come with little warning. When the train left Arrow there were but few signs of the snow that would sweep down from the barren dome of James Peak and envelop the train. The blizzard began furiously, and soon filled the cuts, making progress impossible. The thermometer fell to almost thirty degrees below zero.

After bucking the snow for several hours in a vain attempt to reach the summit, nearly 14,000 feet above sea level, the engineer reversed and started back toward Arrow. He had not gone half a mile when the way was completely blocked with snow. To add to the horror of the experience the water in the engine gave out and the fire had to be killed. The passenger-coaches gave but little protection from the shrieking winds, and snow drifted through the crevices in the windows and under the doors.

Night was coming on. To remain in the coaches meant exposure, suffering, and possibly death to some. There were three women in the party.

"Our only hope of salvation is to walk back to Arrow," said the conductor. "The storm will probably rage for two days. We have no fire, no food, and no help can reach us. The wind will be in our backs, and we can go around the heavy drifts, and possibly make it all right."

The bell-cord was cut and a human chain was made by tying the rope about the waist of each member of the party, so that if any should fall they would not be lost in the huge drifts on the mountainside.

Then the snowbound party started Down the mountainside they pushed their way, sometimes walking on the track climbing over logs and boulders, and floundering on the rugged steeps. They reached Arrow at about nine o'clock that night, weary, hungry and half-starved.

It was three days before the snow-plows could drive their way through the drifts and reach the train. In the engine cab the relief crew found a strange visitor. Curled up and fast asleep on the floor near the boiler was a big Rocky-Mountain bear The storm had driven him to shelter.

For several hours the trainmen could not induce the bear to leave his cozy bed, but finally one of the crew suggested that he be burned out. Waste, saturated with oil, was tied to the end of a clinker-bar and ignited. It was too much for bruin. At the sight of the firebrand he snorted ferociously and made for the woods.

White Demons.

BY JANE WARREN.

A Novel of Love, Adventure, and Dramatic Force. As Each Instalment Crowds on the Heels of Its Predecessor the Interest Increases. The Heroine Is a Red-Blooded American Girl Whose Tragic Escapades Drive All Fear from Her Heart.

CHAPTER I.

A Soul Astray.

AT Shanshan there were three Americans: my father, William Warren, my mother, and myself. If Shanshan were in America it would be called a village. It lies almost thirty miles due north of Peking.

My father was known as the manager for Leung Lo Nieh, a landed proprietor. In reality he was Mr. Leung's silent partner. Cautiously and very gradually they were introducing American methods in agriculture, instructing the tenant farmers in the use of American contrivances, and more than causing two blades of grass to grow where one had grown before.

Mr. Leung was a cultivated, refined gentleman as well as a shrewd business man. He was not a Christian, but, clinging though he did to the teachings of Confucius, he could not see that there was any irreconcilable conflict between the doctrines of Confucianism and Christianity. Mr. Leung was tolerant and progressive.

It was natural that he should seek to improve his own fortunes by introducing scientific methods upon his estate, and it was inevitable that he should resort to a manner of subterfuge to do so. The jealous peasantry would have burned our house over our heads if they had supposed that my father was anything more than an employee of their landlord.

We lived a short distance from Shanshan in a large house that had been built for Mr. Leung's brother, who died about the time it was finished. Surrounding it were extensive gardens beautified in the most exquisite Chinese fashion.

The house was at the base of the foothills of the Shangian Mountains from which came rushing the Tungsi, a river that joined the Pei-ho a few miles to the east of us. The Tungsi crossed the gardens. It was there about fifty feet wide, rapid and turbulent.

A single-arch bridge, built of bamboo and resting on stone abutments, was thrown over the stream from one part of the gardens to the other. It was approached by winding paths through luxuriant shrubbery from the back of the house, and on the farther side of the stream the vegetation was yet more dense and the pathways more circuitous.

For months previous we had noticed many indications of unrest among the Chinese. It was evident that their old-time hostility to foreigners was reviving, and we had not far to look for the immediate cause in the operations of that society known as the Boxers.

Distressing accounts of their proceedings far to the northeast of us came to our ears, but we pursued our usual course and took no apparent alarm even when we knew beyond doubt that the society had extended its influence to the villagers of Shanshan.

While we three were aware that we might be in danger, we trusted in the favorable impression that we seemed to make upon the neighboring peasantry and in the influence of Mr. Leung.

One day in May two events happened, each of infinite importance to us, though the vital character of neither was apparent at the immediate moment. One was a characteristic demonstration by the peasantry; the other the unexpected arrival from far Canton of Edward Kingdon, my *fiancé*.

Mr. Kingdon was at the head of a large commercial enterprise in Canton. We had made his acquaintance in Peking, and during the preceding summer he had visited us at Shanshan.

His appearance at our gate just before *tiffin* (midday meal) was a matter for great rejoicing on my part. My happiness was so exuberant, so overwhelming in its suddenness, that it did not occur to me to ask what had brought him on his long journey. It was enough that he was near. And he, enlivened by the greeting and freed from certain anxieties that had oppressed his journey, did not at first betray the fact that more than desire to see his sweetheart had brought him thither.

Both my father and mother, however, suspected at once that there was grave cause for his presence, and the matter came to the surface while we were at table.

"How did you find matters in Peking?" my father asked.

"I paused there only long enough for a short conversation with the American minister," Edward replied with downcast eyes, as if that answered the question sufficiently.

Father looked steadily at him, and Edward shifted his eyes uneasily.

"Speak up, Ned," said father, apprehending the cause of his embarrassment; "when a young man travels nearly two thousand miles without sending word of his coming, everybody will infer that there was something stronger than love to impel him, and it will be better for all of us to state plainly what is on your mind than leave fear to grow upon uninformed apprehension."

Edward blushed slightly as he answered: "There is nothing stronger than love, Mr. Warren, and it was love that brought me here. With it, however, was anxiety so great that I could not delay for the ordinary courtesy of advising you of my approach. It was a great relief to me to find that your house is still standing, greater that you are still within it."

Father smiled indulgently and looked quizzically at me.

"It speaks well for your love, Ned," said he, "though not necessarily for your judgment."

"May be so, Mr. Warren," responded Edward resolutely; "but is it possible that you feel no anxiety? The most alarming reports of Boxer activity come from this province. You are close to the hotbed of that fanatical movement."

"True enough," said father composedly; "I have seen the Boxers going through their outlandish drill. I have read their placards in Shanshan."

"So close as that! You surely do not find the placards pleasant reading?"

"Not exactly. They are bombastically incendiary, threatening all sorts of things to the 'foreign devils,' as they call us."

We were disturbed by a hubbub at the gate. A large number of persons evidently had gathered there and were clamoring for admission. Edward turned deathly pale and leaped from his chair.

"Tut, tut, my boy," said father tranquilly, "now you are frightening the ladies."

"I beg your pardon, Mrs. Warren and Jane," stammered Edward, yet maintaining his resolute expression; "it is not that I fear an immediate attack, but I have dwelt on the general situation so long that I am on my guard at the slightest outcry."

"I for one am not frightened," said I, rising and laying my hand on Edward's arm. "There are four of us now, all Americans, and we should be able to stand a siege, even if the whole village should attack us."

"The whole village won't attack us," said father rather impatiently. As he told us later, he was nettled by two circumstances; first, that Edward had been voicing the fears that he himself had been concealing for weeks; and, second, that I, in my well-meant braggadocio, had understated the disparity of forces

in the event of an attack. If the Boxers should arise to overt measures, he believed that all the villages in the neighborhood of Shanshan would combine for an attack that would be irresistible

My mother seemed to be wholly unmoved.

"Our servants and the tenant farmers are our devoted friends," she said, smiling quietly.

Meantime the noise at the gate was unabated, and there were so many voices that it was impossible, in spite of our familiarity with the Northern dialect, to understand a word.

Wu Ching Foo, one of our servants, came in. He was a bright young fellow who had no sharply defined duties about the house, but who was everybody's factotum. He had learned to speak English almost perfectly.

"They want to hunt for a lost soul," said Wu gravely.

"A lost soul!" I exclaimed, "whose?"

Wu's gravity was significant of nothing serious. He could laugh as heartily as the healthiest American boy and, indeed, he had a bubbling sense of humor, but at meal times, or whenever he had occasion to address us officially, so to speak, he was the personification of decorum.

"A child's," he replied. "I do not know his name. They say it was lost yesterday in the chapel."

In the early days of our residence in Shanshan there had been a branch Protestant mission on the estate. Mr. Leung's brother had favored it to the extent of erecting a little building within his own grounds, where services were held. The death of the owner, and shortly afterward of the missionary stationed there, had led to the abandonment of the mission

There may have been other causes also, as that the location was not central enough for the highest efficiency, but I never understood them, and they would have no bearing in any case upon the immediate circumstances.

The chapel was still reserved for its sacred purpose. We held a simple service there, which my father conducted, every Sunday. Some of our servants and a few of the peasantry were usually in attendance. There were other Christians in Shanshan, but they were attached to the French Catholic mission in Chien-loo, the village adjoining Shanshan on the east.

"I will see what is the matter," said my father gently.

"Will you let me go with you, Mr. Warren?" asked Edward with an eagerness of accent that was almost like pleading.

"To be sure," was the ready answer; "you may all come, if you like."

We went with him to the gate and saw outside what a stranger might well have taken to be an angry mob. There were not less than five hundred men and women, excited to a high pitch.

Conspicuous among them was a woman who carried a small bundle of clothing. Her eyes were red from weeping.

The mob subdued its clamor as we approached. One tall fellow elbowed his way through the crush until he stood beside the grieved woman. He constituted himself spokesman and addressed my father in a loud, insolent voice.

"We want to go into the chapel," he said.

"Have you become a Christian, Tsing?" asked father

"No, I have not, and never shall!" returned Tsing vehemently, "and those with me are not, but we want to go into the chapel nevertheless. Open the gate!"

"Of course you may go into the chapel, if you have a good purpose in going there. I must know what it is. What do you wish to do?" father asked.

"We will recover the lost soul of this poor woman's child," replied Tsing.

"Suppose you let the woman speak for herself, Tsing." Then, turning to her, he asked, "What is the matter with your child, and where is he?"

"He is at home," she responded. "His flesh burns and his eyes roll. His tongue cries out with words that are not from his right spirit."

"He has a fever," remarked father, "and is delirious."

"His soul has gone from him," she insisted, "and we must bring it back to him."

This is one of the commonest superstitions of the Chinese. Delirium in any kind of illness is interpreted by them to signify that the invalid's soul has absented itself.

"Do you not wish me to take him some medicine?" asked father.

There were murmurs of dissent from the crowd, and the woman shook her head as if frightened.

"We have had the doctor to see him," she answered, "and now we must find his soul."

It was as evident to me as it was to my father that there could be no inducing her to leave off harping on that idea, but I was surprised and a little apprehensive that his offer to administer medicine was so flatly refused.

Time and again he had acted as physician in simple ailments, and my mother and myself had been nurses to a good quarter of the village.

"Why do you seek for the child's soul in the chapel?" asked father kindly.

"Because he was playing there yesterday," said the woman. "He came home at evening and was taken sick. To-day it is plain that his soul is not with him."

"Very well," father responded, "if that is your errand, you may come in. I hope you will be successful."

Father was laying his hand on the gate latch. Edward started and his fists clenched.

His anxiety led him to suspect that this was but a trick to enable the mob to come within the grounds, but we who had lived there and knew the people were satisfied that the request was ingenuous.

The gate was opened and the crowd entered.

Tsing gave me an evil glance as he passed. I was conscious of recoiling as his eyes met mine.

We went after them to the chapel and observed their quaint ceremony. Not more than half of them could get in, but those who could not, stood aside in their usually polite way and allowed us to look through the doorway.

The mother laid the bundle she had brought on the floor and prostrated herself before it. The bundle was a suit of clothing belonging to her boy, the same, presumably, that he had worn while at play the day previously. Members of her family prostrated themselves near her, and her neighbors in outer circles surrounded the group. Most of them burned incense sticks. They all prayed aloud to the wandering spirit to enter the boy's clothing that it might then be returned to its proper habitation.

After this had gone on for a time, one of the men called attention to the little cupola that formed a miniature dome to the building, and immediately they addressed their prayers in that direction.

The idea was that the child had been interested in looking up at the cupola and that his soul had been enticed to it. Before they finished they had addressed their prayers to every special object within the chapel that they could imagine as the possible hiding-place of the strayed spirit.

At last they were satisfied that there was nothing more they could do in that quarter, and they withdrew in even more orderly fashion than they had entered.

"I hope you will find that your boy is better when you return," said mother sympathetically to the woman; "you must let us know if there is something we can do for him."

The woman looked at her in a half frightened, half grateful way, but made no reply.

Father was disposed to rally Edward a little on his evident relief that the odd function was over.

"I should despise myself," said Edward, "if I had journeyed from Canton to bring needless fear to your home, Mr. Warren, but I assure you that even that grief-stricken mother cannot pray for the recovery of her child more earnestly than I."

"I have told Wu to go with them and bring us the news," said father presently. "You were saying something, Ned, about the complicity of officials at Peking in the Boxer revolt."

"I cannot speak from certain knowledge," replied Edward, "but we all know that the reactionary, anti-foreign party has powerful representatives within the palace. It has come to us in Canton as a credible rumor that there are mandarins, if not officials, who are secretly fomenting the Boxer disturbances in order to promote ulterior political ends. I have come here for the sole purpose of begging you to take refuge in Peking while there is yet time."

Father, who had listened gravely, looked at mother and me.

"Ned," he said, after quite a pause,

"look around you and you will see my property, my fortune. I have toiled and sacrificed for many years to build it up. To desert it now would be to lose it forever."

"Suppose," urged Edward, "that the government does awake to the advisability of strenuous action to suppress the revolt. By taking refuge in Peking while this province is being wasted by war you will lose at most only the fruits of this one season. If the government does not soon take the thing in hand –"

"The revolt may die out as a mere windy agitation," interrupted father.

"Oh! do not take such a risk," cried Edward. "You must pardon me for presuming to advise you, but I have lived in China almost as long as you have, and –"

"You are a prospective member of the family," said father quickly. "We may differ in opinion as in years, my boy, but you must never hesitate to express your views on any subject that concerns us both."

From that Edward spoke with more freedom and growing urgency. He dwelt on the danger of trusting to the sincerity of the Chinese government, the anti-foreign feeling in the army, and the impossibility of throwing troops to the vicinity of Shanshan in time to prevent massacre.

On the other hand, father reiterated the arguments with which we had sustained ourselves throughout the winter, the high esteem in which the Shanshan peasantry held him, the fact that many of them were Christians, and the certain support of Mr. Leung. The conversation continued for some time.

I could see that father was deeply impressed, if he was not beginning to yield, when Wu appeared upon the threshold, bowing in his most impressive manner.

"Well, Wu, has the boy's delirium passed?" asked father.

"The boy is dead, sir," said Wu.

"Poor woman!" exclaimed mother. "I wish that I could go to her."

"You must not," said father almost sharply. Then, after a moment, "How do the people take it, Wu?"

"They say nothing where I am," replied Wu. "They look at me and go away together."

"You heard no threats?"

"A little, yes, but Tsing stopped them."

"Tsing, eh? Tsing, our defender?"

"He spoke for you, sir; saying you were a good man. The others kept quiet after that."

Father was silent for a while. "I think," he said at length, "that we'd better go and have a talk with Leung."

CHAPTER II.

A Condition for Safety.

MR. LEUNG'S house was in grounds adjoining our own. Unceremoniously, as was our custom, we walked over, as if merely for an afternoon call.

While we were making ready to go, I accidentally overheard a scrap of conversation between father and Edward.

"I would trust Wu as I would my own daughter," said father.

"And the others?" asked Edward.

"They all seem faithful enough, but, of course, we cannot tell at such times as this."

"Do they all speak English?"

"More or less; generally less."

"But they understand it sufficiently well, I suppose, to get the general drift of such a conversation as we have been holding."

"I presume so. You think, or fear, that there may be spies in my household who will convey to the Boxers our plan of flight if we decide upon flight?"

"I cannot help fearing it, Mr. Warren."

"Well, if we decide upon a radical move, we will be cautious. As yet we have not decided. This visit to Leung ought to remove any suspicion that we contemplate flight. We will go over in the most natural way; but let me tell you, Ned, if it comes to flight, I am not the man to leave behind faithful servants who have embraced Christianity. It would be nothing short of murder to desert them."

"I recognize that," and Edward sighed heavily.

Mr. Leung received us with that Oriental courtesy beside which the Frenchman's vaunted politeness seems an eccentric pantomime. Tea was served immediately as a matter of course. He expressed his delight at renewing ac-

quaintance with Mr. Kingdon, inquired solicitously after our respective healths, and so masterfully kept the conversation within conventional channels that quite ten minutes passed before my father could make an opening concerning the precise purpose of our call.

"Mr. Leung," he said, "I'm afraid I must run away. This agitation of the Boxers has alarmed me at last."

Mr. Leung seemed to be greatly shocked by father's words. He did not unclasp his hands, which were folded upon his lap, but he looked down at them silently.

His brow showed the faintest suggestion of pallor. I could see him pressing his lips together to avoid displaying emotion. I was disheartened before he spoke. I knew that whatever form his utterance might take, it would not be counsel to remain. If he advised flight, it meant that the peril was immediate.

"You must be the judge of that, my friend," he finally said.

"Then you admit the danger," remarked my father.

"I did not deny it when we discussed it long ago," Mr. Leung responded.

"True, but now you regard it as more imminent."

"Yes, I do. For several days, Mr. Warren, I have been dreading this conversation, fearing that it must take place. I could not feel that I ought to bring it on, for that might seem as if I were driving you away."

"You know me better than to suppose that I would take anything you might say in the wrong spirit."

"Indeed I do, but your interests are here as mine are, and you are as keen an observer as I am. As long as you stayed, I persuaded myself that there would be no danger. Now that you see it, I must tell you that I see it, too. But I have not been neglectful of you, my friend. I have had spies constantly observing and reporting the doings of the local Boxers, and I have been in daily communication with the Shanshan yamen."

Yamen is the term universally employed in China to designate a public office or building. "Shanshan yamen" might be translated, "mayor's office."

"I saw the taotai (mayor) to-day," continued Mr. Leung. "He told me that he despatched a runner to Peking yesterday with an urgent demand for troops to suppress the local society."

"I have small faith in the taotai," remarked father. "Even suppose he did send a runner, which I doubt, it is unlikely that troops will be sent in time, even if they are sent at all. Don't you suppose that the government is besieged with such demands from every insignificant yamen in North China? What have your spies reported?"

"In one thing they agree wholly with the information of the taotai," said Mr. Leung; "the local society has had many recruits during the last few days. You will ask whether there is any indication of special hostility to yourself and family as the only foreigners in the immediate vicinity.

"I think I can say with sureness that you would not be molested if you kept wholly in your ostensible place as my employee. But suppose the native Christians are attacked and massacred. Ah! my friend, there is your peril! I cannot imagine you standing quietly by and viewing the slaughter of innocent people without protest."

"It is coming to that, is it?" said father, with considerable agitation. "No, I could not endure it; but my wife and daughter must be my first care. It is clear that we must go. Will they let us go in peace?"

"I think so. I am sure that there is no present intention on the part of the local Boxers to molest you. For this I have the personal assurance of Tsing Lao, chief of the local Boxers."

"Tsing Lao! How happened you to come in contact with him?"

"My spies found that he was at the least an active ringleader, and I went straight to him. Tsing has been a reputable man, so far as I know, but he has a passion for organizing. I got from him a plain statement that you and your family need have no anxiety; but, while he does not say so, I am sure that your safety is based on the condition that you do not interfere. He implied that there was a condition, an easy one, he said, that would remove you from all danger."

"That condition would be an impossibility in the event of a great uprising," said my father. "What could Tsing do in such a case?"

"Mr. Leung," said Edward at this point, "do you not counsel an immediate departure?"

"Immediate, Mr. Kingdon," replied the Chinese, "is a strong word. Haste has its own dangers, to say nothing of the impracticability of starting without preparation."

"You take me too literally, but sometimes people find that they need no preparation. When their house is on fire they do not stop to pack trunks."

"Ah, but it has not come to that, and I trust, for the sake of the ladies' wardrobe, that it will not," and Mr. Leung smiled unconcernedly, as if the subject were of trifling moment.

Then the clever Chinese adroitly called father to one side and, as father told us later, Mr. Leung informed him that not an instant should be wasted. The death of the child would surely be attributed to malign foreign influence, and whatever Tsing's real attitude might be, there would be only folly in trusting to him to stay the hands of the fanatics for more than a very short time.

"At the same time," said Leung, "an appearance of haste would be likely to speed the approach of disaster. You must prepare quietly to go away, the more quietly the better. I will start within an hour for Peking. It doesn't matter what the peasantry think of my departure if they learn of it. Let them connect it with your personal affairs if they will. I shall hope to effect my purpose before they get around to act, and I think I shall do so. I will call on my most influential friends and acquaintances there and see if the army office cannot be induced to send a small guard of troops to convoy you to the capital."

A few minutes later we were in our own house.

"My mind is made up," said father sharply. "I feel that we should have gone before this. Without the help and without the knowledge of any of the servants, let our simplest necessities be packed in hand-bags, which should be placed where they can be reached at a moment's notice."

Just as mother and I were leaving for our chambers, Wu came in to say that Tsing Lao wished to speak with Mr. Warren.

Under ordinary circumstances the call of a tenant farmer or any Shanshan villager would have been a matter to occasion no comment. To-day we both paused and looked inquiringly at father.

"It may be nothing of consequence," he said. "Lose no time. I will speak to Tsing outside."

For a few minutes there was a wonderful quiet within and without the house, that uncanny quiet that precludes danger. While standing motionless before my bureau, I started, thinking I had heard rapping, only to discover that it was the beating of my heart. The next instant I paused to listen with a terrible sensation of strain to the distant tones of my father's voice.

Although I could distinguish no words, I knew that he was speaking in Chinese, because the pitch of his voice was modulated with the exactness that is essential to Chinese speech. That he was speaking in terrible earnestness, too, seemed apparent to my tense nerves. I choked with a strange desire to know what had stirred him.

After that all was still again, and when my bags were packed I stood over my finished task and made a vow that, come what might, I would not take refuge in woman's weakness, but would do and endure my full share in the work of escape.

Presently I heard my father coming to my room.

"Jane," he said tenderly, when I had opened the door for him, "have Ned's warning and anxiety shaken your courage?"

"Far from it," I answered; "his fear has prepared me for the worst and enabled me to bring my courage to what I believed will be the sticking point."

"I am glad to hear you say so, and I have no doubt now that Ned wanted to rouse us all in the most effective way. I thought at first that he was unduly nervous. Now I see differently. You will need all the courage with which he has inspired you.

"Jane, I am going to tell you something that will shake you if anything will. I do not do it to try you, but because I believe it will be wiser to let you know just how fearfully we are situated."

"Tell me, father," I whispered. He was speaking inaudibly.

"That scoundrel, Tsing Lao!" he began. "Has he ever spoken to you, my child?"

"Never, except to bid me good morning."

"He has just been telling me that the Boxers are about to rise in this neighborhood and that only one thing will prevent them from killing us. He names it as a condition," and my father's lips curled contemptuously. "From his point of view it is a very simple matter. He claims to be high in the councils of the society and says that his word will be law. He offers to spare us, Jane, and let us live on here unmolested on condition that you become his wife."

"Father!" I gasped, "what did you tell him?"

"He says it will be advisable for you to make a pretense of embracing Confucianism, but he assures me that just so soon as the rest of the foreigners are driven from China he will be content to let you practise any religion you choose."

"Father! what did you say to this?"

"He is already provided with one wife, but—"

"Father—"

"Forgive me, Jane. I do not mean to keep you in suspense. Surely you can guess my answer. The precise words do not matter."

I stood very still, looking straight at my father, hardly knowing what I felt.

"Then he will lead them to massacre us," I said, after a moment.

"I hope we shall be far from here before the rising takes place," he responded, "but in the event of an unexpected emergency you will know your own particular peril. That is why I bring you this." He handed me a revolver. "It is loaded. Put it where you can get at it quickly, and do not hesitate to use it.

"Say nothing of this to your mother," he concluded. "She will be apprehensive enough under any circumstances. If Leung had only started yesterday!"

I asked him what he meant, and he told me of the private conversation to which I have referred. Hardly had he finished when we heard a commotion in the direction of mother's room. We went there at once and found one of our women servants, a devout convert to Christianity, in a paroxysm of terror.

"Poor Zila!" said mother; "she has just heard that the Catholic converts at Chien-loo have been massacred."

"How did you learn this, Zila?" asked father.

"My cousin from the village," she chattered, evidently somewhat reassured by his calm tone and manner.

"Your cousin has been here?"

"Yes. Gone back now. She wanted me to go, but I am afraid. All the others went."

"Do you mean all the other servants have gone?"

Zila nodded and buried her face in mother's skirts.

Father gave me a look that I comprehended without words, and I went through the house calling vainly to our servants. Not one answered. All had fled at a sudden warning.

"Wu!" I cried, last of all, for I found no trace even of him; "Wu! where are you?"

"Tell me what to do, Jane," said Edward, coming in from the gardens at the back of the house; "I sent Wu away on an errand."

"Then he has not deserted us," I exclaimed, much relieved.

"What did you want of him?"

"Nothing," and I told him what Zila had said.

"It is coming, then," was his only comment. "Thank God that I came in time to be with you."

He folded me for one moment in his loving arms, stroked my hair gently, and kissed me.

Then he hurried to the housetop and I returned to my mother's room. Zila was speaking more composedly in answer to father's questions, but she could tell us nothing of consequence. The servants had been more than half expecting the warning for a long time, and they had fled now because they were certain to be slaughtered if they remained.

Presently we heard Edward calling to us, and we went up to the roof. From there we had an uninterrupted view across the valley to the east and south. In the latter direction the view ended with the range of hills along which the Great Wall is built.

In the east we saw columns of smoke rising at the horizon.

"The mission and dwellings of the Christians have been fired," said father.

CHAPTER III.

The Crisis.

"IS it possible for us to start at once?" asked Edward.

"Possible, perhaps, but hardly advisable. The rage of the fanatics is likely to be appeased for a time by their doings in Chien-loo. If not, if they are simply whetted to further atrocities, it would be hopeless to elude them by day. It will soon be night, and if we have to flee suddenly we can cherish some hope from the darkness."

Edward looked toward the west.

"There is about an hour of daylight left," he said. "What should you say to taking refuge in Leung's house?"

"It would not save us," father answered. "Mr. Leung is well on his way to Peking."

"Then," went on Edward, "if we are to face a crisis to-night and must make an escape, we should have some food with us. Mr. Warren, if you and Mrs. Warren and Jane want to go down-stairs and pack some lunch-boxes, I will keep watch here as long as the light lasts. There seems to be no commotion in the village now. If there is any before dark, I should be able to perceive it, and thus we may gain at least a few minutes."

There was a new revelation for me, not in Edward's words, but in his manner of uttering them. All trace of his former nervousness had gone. He seemed now the quiet, calculating man of business arranging the routine affairs of his establishment

"A wholly sensible suggestion," said father.

He went down, and mother and I followed. We had been at work in the kitchen but a minute or so when Edward came in.

"There's nothing the matter," he said at once, smiling cheerily; "simply something I forgot to tell Mr. Warren."

At that moment father entered.

"Ned," said he, "the rascals have been at my ammunition and abstracted a considerable quantity of my powder."

"I am the rascal this time," responded Edward, chuckling as if he had played a pleasant joke on us. "I was just coming to tell you. There is as much powder left as we can possibly take with us. The rest I have placed where it may do good."

"All right," said father, relieved. "Don't stop for explanations."

"I took the liberty of sending Wu away for the night," said Edward, with a touch of sternness in his voice. "What he is doing may be of great importance to us."

Edward returned to his watch. Eventually we carried supper to him on the roof that he might not lose a minute of light. We sat with him while he ate, and father joined us there.

"Every gate is barred," he said, with a dissatisfied shrug of his shoulders, "and every portion of the wall can be scaled by determined men."

"No matter," responded Edward; "it takes time to scale a wall, during which the beleaguered may retreat."

"To northward?"

"There is no other way, Mr. Warren, if we have to go suddenly."

"I have thought so myself. There are boats along the banks of the Tungsi, but they are between us and Shanshan."

"The stream flows right through the village, but the Tungsi is our avenue of escape if we have to go before Leung returns."

Father gave silent assent to this and looked long to the eastward. The smoke from burning Chien-loo was still rising in dense clouds. In near-by Shanshan Edward had not detected a sign of movement since he began his watch. It seemed to worry him

"Such inaction is ominous," father responded. "The peaceable people are hiding in their houses, the shopkeepers have closed their shops, and the Boxers we can only guess what mischief they may be up to."

"With their fellows at Chien-loo, perhaps."

"Unlikely, for the fires there must have been started while yet Tsing Lao, the local leader, was within my grounds."

How strange it seems to me now that the conversation should have proceeded in such a natural way. There was no quaver in the voices, no restlessness, nothing outward to betray the conscious-

ness of dreadful peril that possessed each heart. Once, as we sat in the gathering twilight, the suspense became a momentary agony, and I wished that the crisis would come. Then I remembered my vow, and no sign of distress escaped me

At last Edward turned to us.

"It is useless, possibly dangerous, to stay here longer," he said. "They will not come seeking us with lanterns, and I can watch to better purpose at the gate."

It seemed very dark within the house when we went down. At father's request we lighted several lamps.

"They know we are here," said he, "and if we displayed timidity by remaining in darkness they might be encouraged to attack."

Edward paused a moment to assist us with the lamps and then went out to the front gardens.

Instinctively we moved with stealthiness. Our nerves were tense with listening.

Full darkness had come, and we could do nothing but wait and hope that this awful suspense would endure throughout the long night, throughout the morrow and, perhaps, another night, until Mr. Leung should come with troops.

My mother's arms and mine were yet entwined when we heard Edward's steps lightly hurrying up the walk from the gate.

"Mr. Warren," he said in a low tone, "come here."

Father started to the veranda. We followed him part way, but halted just within the door. Something in Edward's face indicated that he wished to be alone with father for a moment.

By the light that streamed from the windows we could see them plainly. Both had their heads bent a little to one side, listening

In a moment we, too, could hear what had attracted Edward's attention.

It was a low, discordant sound, now like a wail, now like the baying of a ravenous pack of wolves.

Zila heard and shuddered violently. I put my arm around her, and though she quivered, she made no noise.

"They are coming!" said father, and he started to return within the house.

I saw Edward catch him by the arm and give a backward glance at us. With appalling eagerness I watched them. I saw father bend his head close to Edward's lips and start as if he had received a shock.

Edward again grasped his arm, as if to compel him to listen. I could hear only a rapid whispering, but presently I saw Edward hand my father something that he took from a wallet.

When he had done so, he placed both hands on father's shoulders and looked him straight in the eyes for a second. Then I saw father bow his head in assent.

The tragic force of this pantomime took my attention from that distant, menacing sound which was growing perceptibly nearer every moment. The murderous Chinese fanatics would unwittingly warn their intended victims by outcries. I heard the cries, but I was less impressed by them than by that strange, unheard dialogue between my father and my intended husband.

Both men returned to the house.

"You are not to stir," said Edward coolly, "until one of us gives the word, and then we expect you to follow directions implicitly."

He began to gather up the bags and remove them to the veranda at the back. Zila assisted him. Mother and I were thus left alone with father.

There was a light in father's eyes such as I had never seen before—and never saw again

"Beloved," he said, and for once his strong voice wavered, "let us pray."

He did not kneel, but stood erect, as if to testify that for all his appeal for divine aid he was prepared to exercise his own resources to the utmost. We bowed our heads before him.

"My darlings," said father, when he had uttered "Thy will be done. Amen," "the possibilities of this crisis are worse for you than for me. Our enemies overwhelm us in numbers and their excess of barbarity is beyond thought. We must not disguise from ourselves the entire probability that we shall be overcome. When it comes to that a man can die. It is different with women. You must not permit yourselves to be captured alive. I have here what will save you from the fate that is worse than death. You must both determine now

to use it if the time comes when death is your only hope."

He gave us each a tiny vial.

"You have but to set your teeth upon it," he added; "the thin glass will break, and death will be instantaneous."

This was the subject of that strange pantomime! I did not need to be told that Edward had given the poison to my father; but, as if he feared that love would make me delay the relief until it should be too late, father whispered to me: "Edward advises it, Jane. He brought the vials with him!"

There was nothing to be said. If there had been, we should not have said it. Out in the darkness, startlingly near, we heard the rallying cry of the Boxers.

"Death to the foreign devils!"

"They must have been coming on the run," said father.

"Go to the back veranda, Jannie and Mrs. Warren!" said Edward, rushing in. "Some of them may have firearms. If so, they will shoot toward the lights."

Mother started at once to obey, but I laid my hand on Edward's arm.

"Must I hide while you face peril?" I asked.

There was a momentary expression of pain on Edward's face, and he turned to father.

"Jane!" said father sternly, "your place is with your mother."

I found Zila shivering on the veranda, and drew her to me.

"Courage," I whispered; "I am sure that father and Mr. Kingdon have a plan by which we may escape."

I inferred that this plan would involve traveling down the Tungsi in boats. How that could be managed was beyond my comprehension, for the stream was not only rapid, but its bed was strewn with rocks to a point not far from the village. By day it might be possible to pass the rocks if skill and good fortune combined, but at night they promised certain wreck.

That would mean not drowning, necessarily, but falling into the hands of our enemies, certainly.

The shouts of the fanatic barbarians rang on the evening air. I wondered why Edward did not give the word to start.

The tumult grew louder. There was no sound from the house itself, not a pistol shot or a voice raised in challenge.

At length father and Edward joined us.

"They are battering down the gate and scaling the wall!" said Edward. "Make for the garden bridge by the most direct path and cross to the other side."

We caught up our bags and hurried down the path. Edward went beside me.

"Keep your courage up, Jane!" he whispered; "this matter is moving according to my wishes. It is just as if I had planned it."

"You can't expect me to understand that," I responded.

"No, but I hope to make it clear enough in a few minutes. If they attacked us at all, I believed our chance would lie in their impetuosity, and what I dreaded most was the possibility that they would come in such a disposition that a parley would be necessary. They are not stopping to parley, thank God! but are now rushing through the front gardens. When they find the house empty they will not stop to think further than to suppose that we have taken this way, and they will pursue hotly."

"And you call that fortunate?" I gasped.

"The best thing that could happen," said Edward.

We had come to the bridge. Father and mother were in the lead. Zila was just in front of us.

"Run now!" said Edward. "Go with Zila a hundred yards or so from the bridge end and wait there! I will rejoin you shortly!"

Unwillingly, but this time without hesitation, I obeyed. Zila and I hurried along a winding path until we came to a turn at a slight elevation whence, looking back, we could see dimly the line made by the bridge arching from one bank to the other. It was far enough, I believed, to be within instructions, and so there we waited.

We could hear not only the shrill cries of the fanatics as they ran here and there in the gardens hunting for us, but there came to us crash after crash as costly vases were dashed to pieces.

I could now see that the Boxers were leaving the house and going through the back gardens, beating the bushes as they went.

It was too dark to distinguish more than an occasional dim figure moving in some open space; but I could hear the sound of blows on the shrubbery, and out of the incessant shouting came many an intelligible word.

Poor Zila! trembling, but silent, she stood beside me, doubtless suffering all the mental agonies of death.

Suddenly there was a sound of hurried steps on the bridge. Simultaneously I perceived a livid streak darting along the ground on our side. It ran like a serpent of fire, but with less writhing, till it came to the abutment on which the bridge rested.

With a blinding flash and a deafening roar the end of the bridge nearest us rose high in air. Torn by the explosion from its fastening on the other side, the entire structure plunged into the stream.

Following the roar I heard howls and screams of terror. As darkness closed over my eyes again I seemed to see bodies hurtling through the air and falling into the devouring current of the Tungsi.

I turned quickly to reassure Zila, who had uttered an inarticulate moan and let go my arm.

The vision of worse than death that greeted me! In the dim light of the burning bridge splinters I saw Zila slip to the ground with a dagger in her heart!

Just as I comprehended that dreadful fact I felt myself seized by powerful arms

"I will kill you if you speak! Be silent and you shall live!" was whispered in a tone that I recognized, the voice of him I had most reason to dread of all the barbarous horde in China — Tsing Lao!

Then he drew me to him in a close, brutal embrace, and I felt his hot breath on my face.

(To be continued.)

Awaiting the Great Question.

BY CHARLES ALBERT WILLIAMS.

One of the Thousands Discovers a Distressing Discord in the Harmony on the Stairs.

JOHN was coming up-stairs whistling.

When Madeline heard his shrill notes and his light, quick step, she raised her eyes from the embroidery, and, as her hands dropped slowly into her lap, her glance went quickly to the door which stood ajar.

She leaned forward, listening closely, until John reached the landing of the second flight.

Then she arose abruptly and cast the sewing on the bed. Tiptoeing to the door, she closed it softly and stood listening with her hand on the knob until the feet hurried past and she heard the slam of the door of the second floor front

In the whistle and the steps Madeline had found the dream of her heart and mind. Out of them she had built the frail castle of imagination. In the castle lived hope and love and the future, for John had awakened her to the emptiness of girlhood and the hopefulness of marriage.

Whether the melody was of the slow, sweet notes of the ardent or the syncopated hurry of the careless, it mattered not. Each evening she waited to hear them.

Madeline was one of the thousands, who, like the seeds of the field, are

wafted to the city by the current of circumstances. Some fall among thorns of evil; some upon the rocks of misfortune; others upon goodly soil, where they blossom into womanhood and add to the city's sum of beauty and truth. Madeline felt that she had fallen on fertile ground, where all things fair might bloom.

The song of the city had been a dull monotone in the beginning. There was a position to find and advancements to win. There were acquaintances to make; to weigh in the scale of ethics, and to keep or reject.

Money was scarce, indeed, and luxuries were not a part of the daily scheme. At first it had been necessary to be crushingly frugal, but the charm of her personality and the truth of her dark eyes, the dulcet music of the voice that rippled through her faultless lips, the unconsciously proud posture—these had won for her deep respect and some success.

For two years she had found happiness in an unsullied conscience and bodily vigor, rather than in spells of amusement or the material things acquired by economy.

And now the great fact—love—had come into her life. It must have been when John came, yet she had been unconscious of it until it seized her and swept her emotions to a level that transcended all her experience.

How well she remembered the first night at the dinner-table; the introduction and the few commonplaces. The nights of three months had succeeded one another with almost incredible rapidity.

Gradually had tongues touched on more personal matters and she had gleaned his story. He came of good people in the West; a mother and father of some culture. He had come to New York to take a satisfactorily remunerative position with a railroad. Evidently he was made of the sound stock in which a woman may safely invest her future

He had grown more attentive with the days. It seemed to her now that soon it thrilled her to think how soon —he would ask the great question. And she knew that her answer would be yes; that her love was his; that she was his

Madeline, with tingling pulses, resumed her sewing and spent a happy evening in ruminating and dreaming.

The next night she entered the dining-room with quick, joyous step and took her place at table.

Her glance went quickly to his place, and her heart surged with sympathy. At his plate was an envelope with the telltale black band around its edges.

She dissipated much of the zest of the meal in wondering if the letter would bring grief to him. She hoped that perhaps it would not be too keenly personal.

Presently he came in.

"Hello, people!" was his terse greeting, but his eyes rested for a lingering moment on Madeline.

He regarded the envelope with a frown of concern as he sat down. He tore it open, extracted the letter, scanned it hastily, and thrust it into his pocket with a little sigh.

"Trouble?" asked Madeline softly.

"My mother," he answered quietly.

Her eyes beamed with feeling.

"I'm so sorry, John," she said.

He regarded her for a moment in silence, then shrugged his shoulders.

"It won't be so hard for me, I guess," he remarked. "I haven't seen her for a long time. I've grown to forget some of the things of the old days."

Madeline looked at him for an amazed second. Tears rushed to her eyes and she hung her head that he might not see.

"But your mother, John," she said, with a little catch in her voice.

He continued to eat in silence.

Hastily finishing her coffee, Madeline excused herself huskily and hurried upstairs to her room. When she reached the door she could no longer restrain her emotions. Pushing it open, she threw herself on the bed and tears flowed freely.

This, then, was the end of her dream, the razing of her castle. How quickly had the veneer been stripped from the man and how clearly his nature had been revealed in all its heartlessness. She knew now what her answer really would be if he asked the great question. She could not marry a man whose heart had been left unscarred by the loss of his mother.

John was coming up-stairs, whistling.

The Sunny Side of the Track.

AT a certain town in Canada a butcher made a shipment of "1 keg sausage-casemgs" to a suburban manufacturer of sausages. The billing-clerk way-billed it correctly to a junction-point for transshipment, and it was loaded and forwarded "O. K."

In rebilling, the clerk at the junction abbreviated the item thus: "1 keg saus. casegs," and it duly went forward from there

The shipment was next subject to transfer of carriers a couple hundred miles further on, and the item on the transfer-sheet read, "1 keg saws, cstgs"

After being rebilled, rewritten, and rechecked several times in this way, no one had the slightest suspicion of error, but in the hands of the new carriers the article happened to get into a rush of freight, where perishables were given preference, and "Saws, Cstgs." became lost for the time being, being stowed with non-perishables to be forwarded when opportunity offered.

It remained in hiding a long time, and, not turning up at destination, it was then traced from the original shipping office. Strange to record, the papers tracing it read "S Casemgs," which gradually merged into "Saws, cstgs."

A claim-agent finally located the keg, and it was only after opening that the billing error was discovered. By that time the shipment was about five weeks overdue at destination and the contents had spoiled.

A PRETTY young school-mistress was accustomed to ride to and from her school in the caboose of the local freight. Her regard for the conductor was a trifle more than friendly, but he was either very bashful or did not reciprocate. The school-ma'am was not sure which, and determined to find out

One morning she permitted conversation to lag to such an extent that the conductor, solicitous for her welfare, asked what was the matter

"Oh, I feel blue," she replied "Nobody loves me and my hands are cold."

"You shouldn't say that," he consoled her, "for your mother loves you, and you can wear gloves."

Thereafter she rode on the local passenger

A TRAVELER was detained at a little country railroad station in England for half an hour, and was chatting with the station-master when the bell rang sharply half a dozen times. Instantly the three employees —station-master, ticket-agent, and porter— ranged up in a line on the platform and stood at attention

A moment later a locomotive with a single saloon car slowed up. The solitary occupant of the car regarded the men sharply from the window, made hurried notes, and quickly retired.

"Who was that?" the traveler asked the station-master after the train had gone. "Some prominent official of the line?"

'Oh, no," was the reply. "That was the railroad company's tailor measuring us for new suits."

MRS. SQUEEDUNK (at the window of the ticket-agent): "Say, mister, can two people ride one way on a round-trip ticket?"

JUDGE BLENSKI speaks Polish, German, English, and French, but he can't talk West Milwaukee. He tried to understand it in court and he made a bad failure

A brakeman was being tried for assault and battery on a switchman. The brakeman was on the stand and testifying.

"Judge, I high-balled the hoghead to slip the rattlers over the transfer, and this pie-eyed geek ."

"Hold on!" exclaimed the court. "What kind of language do you talk?"

"The same as every one in West Milwaukee," answered the brakeman

"Is there an interpreter present who can speak West Milwaukee?" asked the court.

There was, and the trial proceeded.

"I SEE you are carrying home a new kind of breakfast food," remarked the first commuter

"Yes," said the second commuter, "I was missing too many trains. The old brand required three seconds to prepare. You can fix up this new kind in a second and a half."

THERE was a grinding of wheels, the air came on slowly, and the train groaningly stopped. An irate and weary passenger grabbed the sleeve of the porter as he hurried through, and demanded:

"What's the matter now? This is the third time we've stopped. What is wrong?"

"Nothin', suh, nothin'," replied the suave Ethiopian. "Dat's jest de block system workin'."

INSTEAD OF STAYIN' HOME WITH HIS WIFE AND KIDS WHEN HE WAS IN OFF A RUN, HE USED TO COME DOWN TO THE BEANERY WHERE US TALLOWS WERE SITTING AROUND

Clancy at the Switch.

BY DONALD FRANCIS McGREW.

The Tallow Pot Gets on the Job in Time to Save Many Lives and Several Heads.

THIS story is full of everything save brickbats, and the only reason we missed those was because they weren't handy to reach.

It's a good old world, but sometimes everybody on the division gets up with a copper taste in the mouth and a seven-year-old grouch. Then there's trouble for all hands for a week.

Mine started when I bumped into old Randal one night down at the beanery some time after that hog wreck. He was a pompous sort of Big E, the kind that imagine a hogger is bigger than the President of the United States; but it don't pay even to get swelled up over pulling No. 32, the fastest through run on the line

Of course, old Randal was known to every one on the road, and was looked up to as a great hogger, which he was; but Randal *knew* that. He didn't know, though, that he was just an every-day man like the rest of us, after all, and that's where the trouble started. It fell to me to tell him so.

Randal wasn't old in years, though he was in service. He was forty then, was built like a concrete 'butment, and had a face carved out of leather. Gleaming out at you from that stony map was a pair of lamps like two gimlets, very knowing and wise.

I never heard him give a real laugh in his life; when he did let loose, it was a sort of blankety, heavy-handed affair that sort of took all the fun out of the laugh around him

Now, instead of stayin' home with his wife and kids when he was in off a run, he used to come down to the beanery where us tallows were sitting around telling about our trip and how "she

never quit popping all the way"—and he'd sit around there and sort of inhale the adoration of the young tallows and tell 'em how to railroad. No one could advance an idea but what he'd butt in and tell you where you was wrong.

I got tired of it.

"Look here," I jerked out at him one evening, when he butted into an argument I was putting up, "you can't hand me anything, old top. I know what I'm talking about."

"Why, you cheap cub," he snorted, "I know more about railroadin' in one minute than you do in a year!"

That got my goat. "Why," says I, "you old fossil, you've been doin' the home guard act on this dinky line for twenty years, and never poked your nose beyond the ends of them two steel rails out there. Know more than I do about railroading? I've been on twenty different roads gettin' experience in my eight years, and when I get on the right-hand side I'll know something. Why you, you bonehead, you don't know the Civil War is over!"

Wowey! That started the fun! He came at me like a man taking a run at a hill, both fists a flyin'. We mussed up the scenery awfully for a while. I lost some teeth and part of one ear, and dislocated all my knuckles; but I'm not going to tell what I did to him. Modesty forbids.

I'm too small to brag, anyhow, as some one might take it up. I know, though, that I kept getting madder and madder, and when they pulled me off I fought like a wildcat to break loose; and my temper got away with my head, for I yelled:

"Lemme at 'im, lemme at 'im!" And again I yelled: "If you ever look cross-eyed at me again, I'll *kill you sure!*"

Them kind of remarks are bad to make. Maybe nothing will come of them, and maybe a whole lot. It's a good idea to count ten first. Anyhow, it was said, and Randal and I were both in for repairs for a week.

I was in the same block with Frank Smith then, but when I got off the sick list, and got a call, Frank's wife was sick, and I got out on a fourth 88 with a hogger named Barnes.

Big guy, he was, and had little to say. He could run an engine, too. He mauled her a bit hard, and you had to be careful and not hit the box too heavy and keep the fire shook down, for if you didn't you'd have a dirty fire about three-fourths of the way over that one-hundred-and-fifty-seven-mile run, and be in Dutch with yourself.

But I was wise to him right away and had plenty of steam; and nothing of any moment happened on the trip until we struck Moleville, where all the slow freight-crews generally got a bite to eat.

We stopped up at the end of the yards, took water, then pulled down a piece, and stopped. Says Barnes to me:

"Boy, I've got a lunch with me, and you'd better hike on down and get something hot to eat while we're waiting for orders. Fire needs a little cleaning, but I'll do that for you."

I thanked him, took my water-jug, and went down to the beanery, which was just across from the depot. I was hungry, too.

"Gimme ham and, and let the white wings fly," I says to the guy with the dirty apron. "And draw one in the dark."

Out he comes with the ham and eggs and the coffee—and me to it! But about half-way through here comes the conductor puffin' and pantin'.

"Come on, tallow," he grunts, "we want to go. Got the orders."

I looked that guy over. He was one of those old school cons who stand down at the end of the train and punctuate each signal with, "Come on, you flathead! Back up, you blankety-blank monkey-faced leather head, or I'll come up there and muss you all over the scenery!"

His kind are always sitting in the cupola with their watch out and their eyes on the smoky end, chewin' up a dry stogie and every now and then savin' to the hind man: "If that hoghead fell off the roof he'd hit the ground late!"

Them kind of cons would hook the Washington Monument onto you if they could, and give you a high-ball.

I pulled my eyebrows down and looks at him. I was just goin' to open up, when Barnes showed up over his shoulder.

"You go ahead and eat," he says, "and eat till you can't eat any more."

Right then he and the con had a little dialogue.

"I'm runnin' this train," says the O. of R. C. man.

"And I'm runnin' the engine!" Barnes grins back.

"We got orders," says the con.

"Damn 'em!" says Barnes

I was strong for Barnes right there. And I blew the dome off the goat all the way. Only one other thing happened of any consequence, and that was when I had the chains down and the coal was gettin' far back.

"Say," I says to the head shack, "how's chances for a little coal?"

BARNES AND I CAME BACK ARM IN ARM WITH VICTORY SHINING ON OUR FACES

"I'll report you!" the con yells.

"You do, and I'll make you think that Big Chief Meyers had walloped you for a home run," says Barnes.

Very interesting conversation that was. I almost forgot to keep on throwing that feed into me. The con went out a fumin', and, when I was through, Barnes and I went back to the engine.

"Trouble with some of these cons, is," Barnes commented, as we pulled out, "they never been up against thirty tons of lumps and slack. All they know is grab cars"

"Kick it down yourself," he says to me "That's the way I got my start."

His start! I ought to have handed him his finish right there. But I was feeling pretty well with the world, so I didn't.

He was one of those kids with a half-inch forehead and a bang over one eye, that's been driving a grocery-wagon around some small town before they became a "real railroader"—the kind the barber always puts cologne on without asking.

Barnes, he couldn't hear, but he un-

derstood, and he bent a look at that shack, thought better of it, and then, as we had a clear rail, he got up in the tank and kicked down enough Ethiopian emeralds to boil all the water we needed the rest of the way in. So I let the mistake live a while. Nothing else happened on the way over.

Coming back, though, we caught an extra, a bad steaming engine, a full train of deadheads that nobody cared if they *never* got over the road, and that same train-crew.

Besides having bad coal, the 358 acted like she either had a blow hole in her cylinder casting, or needed her cylinders rebored and was blowing back on herself. She was the least bit lame, too, sort of coughin' out of three lungs, and, to add to our joy, Barnes discovered she had a leaky dry-pipe.

He put her on center as near as he could once, and got down under her with the coal-pick — she had a Stephenson motion, not a Walschaerts—but, though he squared the link blocks up a bit, he couldn't fix the rest. Outside of that, the 358 was all right.

As Barnes wasn't kicking, I suppose I hadn't ought to have felt bad either, but it is nagging to see the hand on the indicator act like it had a rubber cord on it pulling it down. No tallow ever gets half so tired if he can lay her up against the peg when he wants to and listen to it sing

I had to fire her with the blower cracked, taking chances on starting the flues to leaking, and making clinkers, and all that—but she coughed like a sick cow, so what could I do?

By and by, with the bad coal and all thrown in, I come to the conclusion that I'd be happy if I could hold her to one hundred and seventy-five pounds of putty, while shinin' up strong on the calendar of the future was the fact that we were going to tie up somewhere under the sixteen hour law. We had a big drag behind us, too, and was being tied up by the train delayer at every side-track

Somehow an engine in that condition takes more coal than she would if right. The coal was getting way back. As we rolled along I says to that head shack:

"How's chances this time, shacky?"

"Why didn't you kick it down while were in siding?" he says. "No, I don't kick down any coal!"

With that he closed the window I had just opened and began to hum something to himself

I had to put in a fire, and I didn't hear him. But when I straightened, I did. He sings, presumably humming to himself, but loud enough so I could hear:

> The flea and the fly flew up the flue,
> Says the flea to the fly
> "What shall we do?"
> "Kick down your own coal like we used to do!"
> And they flittered and fluttered,
> And flew up the flue!

Can you imagine that? I gasped and looked at him. Then I roared:

"I'll flutter you up the flue, you Lord Fauntleroy imitation! Get down out a that seat or else open up the window!"

> "They flittered and fluttered and flew up the flue!"

he sings again.

Me? I up on that seat-box and banged that window open. You see, I had been letting him ride with it closed so's he could keep warm, while I stuck my head out a the gangway for air instead of taking what was my right. He could just as well have edged forward on the seat and kept the running board door closed the jacket would have kept him warm.

I was looking for him to warble, but just then Barnes butted in.

"Ain't you going to kick down no coal for that fire-boy?" he yells

"No," says the shack

"Then you get out on top and decorate," Barnes says.

"Not me," the shack retorted, starting nevertheless. "I don't have to ride the smoky end with the window open, or decorate and freeze, either. I'll go back over to the caboose."

Well, he went, and in a little while we hit the siding, so, taking Barnes's switch-key, I got down and headed her in. Then I got back up, put up the chains, and began to shovel down coal. Barnes, oiling round, intended to get up and help me just as soon as he finished. Just then a bo showed his face up in the gangway and says to me:

"Fire-boy, how's chances to kick down coal for a ride?"

"Good," I says, "as long as it's all right with the hogger. Come on up."

It was all right with Barnes, so the grimy, skinny bo gets onto the tank and dug into the Tennessee asphalt. He was whaling down lumps against the chains while I lay on the seat-box, when, like two war-clouds on a peaceful sky, the con and the head shack came up into the gangway.

"What's the reason this brakeman can't ride this engine?" the con began. "And what's that dead-beat doin' here? The head man told him back there he couldn't ride. Now, by the blankety old Smolean James "

That argument started in hot words and ended in lumps of coal, punctuated by fists, harsh opinions, No. 9 boots, and uppercuts.

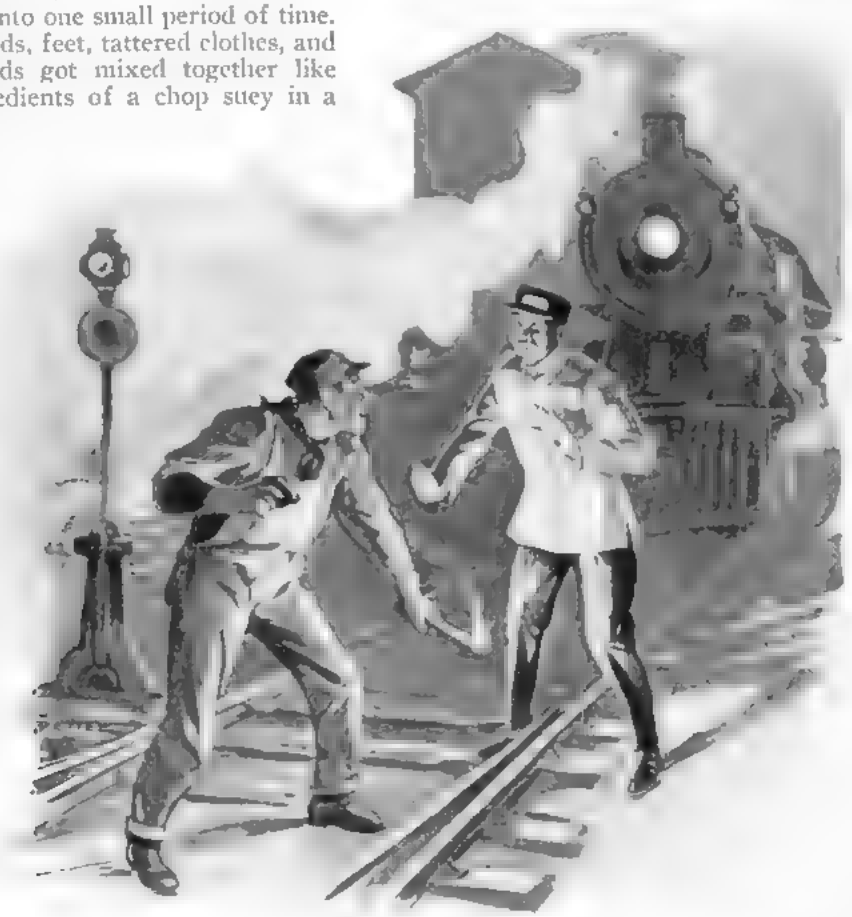
I never saw so much action compressed into one small period of time. Fists, clods, feet, tattered clothes, and cuss-words got mixed together like the ingredients of a chop suey in a whirling churn. We started on the deck and ended half-way down the train, the four of us, but in the end Barnes and I came back, arm in arm, with victory shining on our faces. No one played "Here the Conquering Hero Comes!" but that bum's joyful grin was just as good.

"Do I ride?" he asks

"You ride," Barnes says.

The bo — looking back at the head shack and the con going back to the hind end supporting one another like two fellows who meet at 4 A.M., and say, "Lesh go home together!"—well, that bo grins, digs into the coal, and starts whistling "The Hat Me Father Wore!"

Pretty soon the head shack came back washed up. He never said a word. When he headed us out he let that win-



"WHAT ALL'S WRONG WIF YOU SLEEPY HEADS, HEY? HAS A REAL RAILROADER GOT TO GET OUT AND CLOSE YOU-ALL'S SWITCHES?"

dow alone, too. Seeming peace had settled in the family.

That bo, however, was still shoveling down coal. As I watched him I saw him waver a few times, so I gave him the sign to come down.

"Look here," I says, "you haven't been dining at the Waldorf-Astoria lately, have you? Get up on that seat-box; and here here's what's left of my lunch. Go to it."

"Say, boy —" he says, with his hand on my shoulder, and his eyes kind of dewy.

"Nix," I told him. Emotion ain't in my line. "I've traveled on a tie pass and John Shanks myself," I told him.

Barnes gave him his lunch, too, and I kept an eye on that head shack to see that he didn't edge back and crowd that bo off the seat.

So we rolled along, heading in, heading out, getting run around twice, fighting for steam, and coaxing the old goat along. I was mighty glad when we got the order to tie up at Veal Valley Junction, where the Q. and M. crosses, for I was tired

"Drop off here," I says to the bo, "and when the other crew comes along I'll fix it for you with them." He did as he was told and went into the depot waiting room.

Next we cut off the engine, took the head shack and went up for water, then backed down over the Q. and M. and into our siding, whose switch was about fifty yards from the interlocking-tower at the crossing.

After arguing among themselves as to whether they'd stay awake and ask the despatcher for a pass in on the next passenger, the train crew decided to go back to sleep and go in on our train; so the head shack got his red light and went with them.

After washing up in a pail of hot water drawn from the overflow of the gun, Barnes went back, too.

"I've got a friend in the hind man," he says, "and I guess they wouldn't try to run me out, anyhow."

After turning out the white lights, taking down the white flags, and covering the headlight, I went back to the cab. It was up to me to watch the engine until the other crew came.

Now, if I'd wanted to, I could have dropped the curtain, kept her full of water, and let the other fellows get her ready. But I didn't. There was a dance on at the division point that I figured on going to. I wanted a little sleep beforehand thrown in.

So, as the fire needed cleaning bad, I set the air on the train, got down, shut the valve on the air-hose, propped up the knuckle-lever with a stick, and then moved the engine ahead.

The distance between the ash-pan bottom and the ties was about eight inches, so I had to move back and forth several times to allow space for the clinkers to drop through. I was mighty glad there was no ice in the slide when I come to dump the ash-pan. This done, I got up, put on the gun till I had a black gage (so's to have enough water to last me through) and then dropped the dump-grate and cracked the blower to keep the gas out of my lungs.

Cleaning a fire on one of those hogs is no sweet job. The clinkers hung like cement. I had to take the shaker-bar to knock them through the dump-hole, besides raking them back with an eleven-foot hook of one-and-a half-inch Norway iron. Nice little toothpicks, them hooks are.

My back felt like a lumbago institution when I got through. I nearly had the fire go out on me, too. Right there the company lost some ties, a pile being handy at the gangway. This saved me; I hooked up the dump-grate, piled in green coal, opened the blower wide, and backed down and coupled up.

While she was getting hot, I filled the lubricator and the cab-lights, so that all the new crew had to do was to get on and high ball. I dropped the curtain then, and, in the quiet night, I rested on the hogger's side, cooling off and listening to the blower.

Now, I hadn't been paying any attention to that switch. I had been too busy with the hook. I half-way expected a crew on No. 32, and so, when the reflection of her light showed in the sky a long way off, I sat there with my feet on the reverse-lever and watched her dreamily

It was kind of interesting to see that reflection a long time before you saw the train. The reaction, the sound of the blower, and the slow throbs of the air-pump acted like a lullaby in the stillness.

No. 32 was coming into sight. I was half-way dozing, content with my pipe, when—holy smoke!—I happened to look up at the switch-light! This was on a high pole. It should have showed white to me! I couldn't see anything at all! I got an uneasy hunch!

Was the light out, or— I got down and ran for that switch

The light was out and the switch was open. There was no sleeping there to write a poem about. I was mighty relieved, though, to know there was a real live tallow to close it.

But the next instant I was scared stiff. I swung on the lever and could only move it about an inch. Nor could I find out in the dark what was the matter. I pulled again, did some mighty quick thinking, and ran for the tower.

I knew 32 had run past the warning semaphore down the line—either through carelessness or taking a chance or because the light was out. But if it was out, he should have stopped. He hadn't, though. He was coming fifty miles an hour. I thought I'd be too late at the tower.

But just before I got there I saw the semaphore of the interlocking go red against 32. One of the Q. and M. men had got into the Q. and M. block ahead of our train.

There was a harsh slamming of air, the Q. and M. man showed up and roared over the crossing, and in the mean time I ran back to our hog for a torch.

As I stood at the switch-point looking at a small piece of brake-shoe casting that had fallen between the points, a negro porter came running up ahead of 32, which was coming along slow, and he says to me:

"What all's wrong wif you sleepy-heads, hey? Has a real railroader got to git out and close you-all's switches?"

A real railroader! "Say," I says, "you move or I'll dent in your face!"

"You will?" says he. "Well, I guess you-all won't!"

The conversation came to a close right there. He got into motion a second before I did, though, and when I paused for breath, failing to catch him, here come 32 poking along. I ran back and closed the switch.

"Oh, it's you, is it?" Randal says, leaning out of the window. "Tryin' to wreck me, or what? You'll hear about this."

"Will I?" I yelled. "So'll you! If you hadn't run past that semaphore, you wouldn't 've come so close to getting busted up."

I added a whole lot more, too, and he cussed back till he picked up the porter and got out of hearing

No crew was on her, so I went into the station, telling the operator his light was out on the switch-stand. The bo had gone. I got back, and, as soon as 44 came in with the new crew, I went back to the caboose. None of our crew had woke up during the little flurry, and I didn't say anything until we got in. Then I took Barnes aside and told him all.

"What on earth will we tell the old man?" I asked.

"The truth," says Barnes. "If I told him the switch was all right when I went back to the caboose, it'd look mighty bad for you. Fact is, I forgot to look at the switch, and I'm in bad. But I'll tell him the truth. That shack either knowingly or carelessly left that switch open."

"I hate to see you get any time for overlooking that bet," I says. "And if it wasn't for the remarks I'd made about killing Randal, I'd swear the light was all right when you left."

"Stick to the truth," Barnes says.

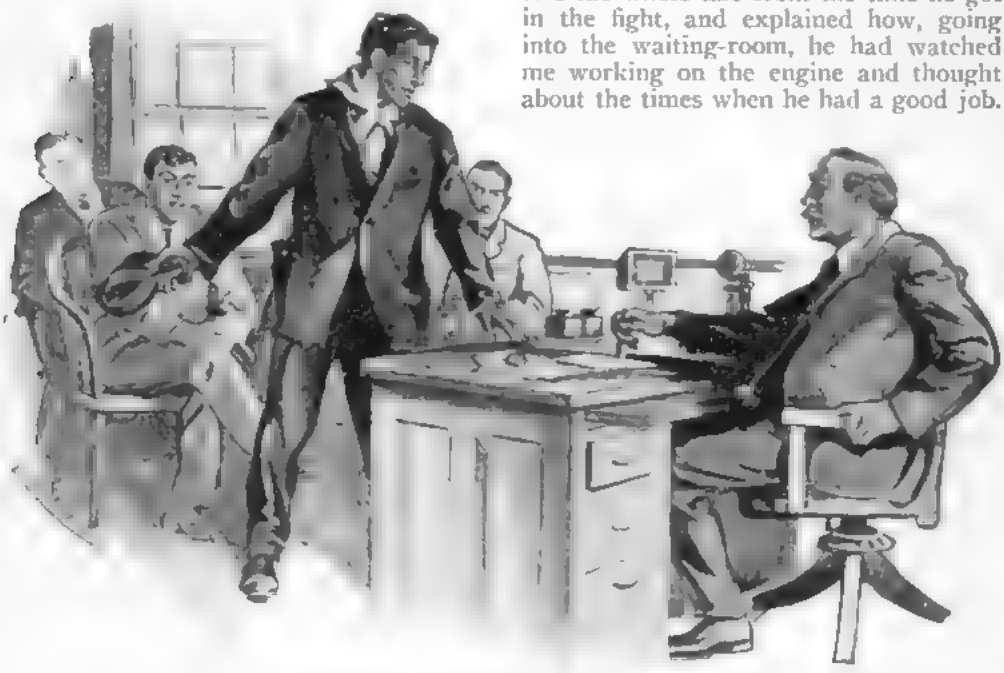
So we did. McGugin and the trainmaster had some investigation, believe me. The head shack swore he closed the switch; the conductor swore he saw later that she showed a white light down the main; the hind man said he didn't notice it, though he had come up to the platform; Barnes owned up that he had not noticed it, either, after he backed down from taking water.

Randal swore the light was out on the semaphore, but that he took a chance and had his train under control when he saw the light was out at the switch also. He said a man had to take those chances making time these days. Said he stopped just when that providential red showed from the crossing tower.

Considering that he nearly ruined all the glass in the diner stopping that train, I don't guess he had her under control. He had passed the interlocking warning

semaphore before the man at the levers threw her red. But that didn't help me any. "Clancy," McGugin says to me, "it looks bad for you, either from a careless or intentional view-point."

"But I was in the cab till 32 was nearly on us," I pointed out. "What could I want to wreck 32 for and stay in the cab of that goat? And what have I got to do with the switch?"



"I HEARD OVER AT THE BEANERY THAT THIS TALLOW WAS IN A LITTLE HOT WATER."

"Every one on the train is responsible in a way," McGugin says. "Also, here's a man says he saw you off the engine for some time."

He brought in one of those meddlesome no-goods who are hanging around small stations at all hours of night and day.

"Looks pretty bad," McGugin repeated. "All that saved 32, apparently, was the interlocking man throwing the red against her instead of the Q. and M man. He must've been asleep, too, or he'd have had that warning semaphore against us."

So there I was! Attempting to wreck the United States mail was against me as well as the rest. Old Randal was fighting hard to keep down a grin. I was thinking I'd better bust through the window, when in comes that bo I had helped a little on the trip.

"Which is Mr. McGugin?" he says. "Oh! Well, I heard over at the beanery that this tallow was in a little hot water. I'm an old railroader myself. Booze and sickness made me what I am. I heard all the talk, and I want to tell what I saw."

I had almost forgotten about him. He told the whole tale from the time he got in the fight, and explained how, going into the waiting-room, he had watched me working on the engine and thought about the times when he had a good job.

He would have come out and helped me, he said, had he been in better physical condition. He swore I never went near the switch until the time I jumped down and ran when 32 was coming.

Then he had stepped out on the platform and seen that the switch-light was out for the first time. He started to run to it, saw me going for the tower, then saw the red go against 32, and he stopped.

Seeing that the trouble was averted and that it was quite likely the head shack had forgotten to close the switch and would be punished for it, he went back to the depot.

He felt too weak to shovel any more coal, so he got into an empty furniture car, covered himself with some bags the

furniture man had left behind, and rode into the division-point.

Well, when the station man corroborated part of the bo's statement that he had been in the waiting-room and that he, the station man, had come out behind the bo when 32 showed up to see what was the matter—that let me out

"Now," says the trainmaster to the conductor, "you said that the switch was all right when you went back to the caboose. You will go to the doctor and have your eyes subjected to the color test."

This had the con in a hole right there. I guess the trainmaster had an idea that scrap had something to do with that deal. If the con failed to pass the eye test, he lost his job, and if he did pass it, he made himself out a liar. He quit right there, saying he wouldn't submit to any such humility.

Next came the head shack. "You're fired," says the trainmaster, "for leaving that switch open. Turn in your lantern and keys."

Following that, the super gave the station man and the interlocking man ten days apiece, one for not keeping an eye on his light, the other for waiting so long before he threw that semaphore.

McGugin gave Barnes thirty days for not noticing the switch, and Randal thirty days for running past a dead light without flaggin' in. The hind man was the only one who got off free.

"And you," says McGugin to me, "I've got a notion to take you out and beat you up on general principles! About every other trip there's a free-for-all fight pulled off, with you as the main-spring!"

"Well," I said, looking at the bunged-up remains of them two who had interviewed Barnes and me, "you can't deny that we did a good piece of work."

"Shut up!" says McGugin. "I'll just give you ten days for chasing that poor, defenseless coon!"

I left, satisfied, and later worked on the round foreman's sympathies until he gave that bo a job helping machinists. I went good at the beanery for his meal ticket. And the only thing I'm sorry about is that I didn't get the coon

Mr. McGrew's next story, "Getting the 463 Ready," will appear in July.

950 MILES OF ELECTRIC RAILWAY BUILT IN 1912.

THE *Electric Railway Journal* has collected and published elaborate statistics as to new electric railway built in the United States during the year 1912. It appears from these figures that a total of 950.29 miles of electric railway, or electrified steam road, was put into operation during the past calendar year. This compares with a total of 1,191.58 miles reported by the same authority for 1911, 1,397.26 miles for the year 1910, and 887.16 for the year 1909. The total is less, therefore, for the past year than for two years previous, but slightly greater than in 1900.

The compilation is from official sources, and represents only track completed and placed in operation during the year, but electrified sections of steam railroads are included. Classified by States, the greatest length of new track is credited to New York, 93.47 miles. The State showing the second largest new mileage is Oregon, with 83.5 miles; and California is third with 82.7 miles.

In New York the largest single work is 58.3 miles of new electrified track put into operation by the New York Central. This comprises 38 miles, single-track mileage, of four-track road between Tarrytown and Croton, 14.3 miles in the Harmon and Croton yards, 4.1 miles in the Grand Central Station, and a small additional mileage of yard and sidings. In the same State an 18-mile road was built by the New York, Westchester and Boston Railway, which is a subsidiary of the New York, New Haven and Hartford Railroad.

In the State of Oregon the largest mileage is credited to the Oregon Electric Railway, which built 78 miles of road connecting Salem, Albany, Junction City, Harrisburg and Eugene. This company is affiliated with the James J. Hill railroads. In California a large proportion of the new mileage was that built by the Harriman lines at Los Angeles and Oakland, 18.5 being added in the former place and 12.2 in the latter city.

SHIPPING THE ARCTIC KING.

Though Monster Polar Bear Fought Ferociously for Freedom, He Was Finally Vanquished by Chloroform and a Pet Walrus and Placed in Captivity in New York's Zoological Park.

BY WALTER BEASLEY.

"THE big bear is out. Shut the cabin door, please."

The remark came from Paul J. Rainey while returning from Arctic waters with some live animals for the New York Zoological Park. The largest and most magnificent polar bear every captured alive had broken out of his crate.

Fortunately, through the alert efforts of the captain, Eskimo crew, and others, the huge creature was driven back again into captivity. The threatened intrusion of the man-eating ice king is but one of the incidents that occurred during his transportation.

To fill the enclosures of the New York Zoological Park with rare and handsome animals, generous and venturesome sportsmen make journeys to the far corners of the earth to capture their trophies.

Mr Rainey's great bear, "Silver King," was captured in one of the small bays of Ellesmere Land at about the seventy-seventh parallel. He was sighted a mile or so from the steamer, standing on the edge of a big pan of ice, evidently on the lookout for a meal. A launch was quickly lowered.

As the animal was to be taken alive, Mr. Rainey decided to try his method of catching with a lasso. When they reached the ice, a hundred yards to his left, he plunged into the water. The bear made a more beautiful dive and glided into the water with hardly a ripple. He did not remain under water long, and he was quickly overtaken.

He turned to fight, and then the lasso was deftly thrown over his head. In a moment he had worked the rope from his neck and was free. He was quickly roped again, and again he fought his way out of the noose. Suddenly he made a dive, came up directly alongside, and struck the boat a terrible blow, driving the men in a wild heap across to the other side. He then made another sudden dive and disappeared, but came to the top a hundred feet away, near the edge of a large pan of ice that extended a mile or so back to the shore.

"Quick, sir, he is on the ice-pan, full speed ahead!"

The lasso whizzed and the big creature was roped just as he was climbing out onto the ice. This time the rope was permitted to lay slack until he had put his four legs through it. In the excitement the engineer had neglected to reverse, and when the bear went out on the ice he almost hauled the launch with him.

Backed Out of Trap-Door.

The engine was started, and gradually the launch began to pull him into the water. He reared on his hind legs, bit at the rope and jumped up and down, but steadily and slowly he was dragged to the edge. Finally, with a vicious growl, he plunged into the water, churning it angrily

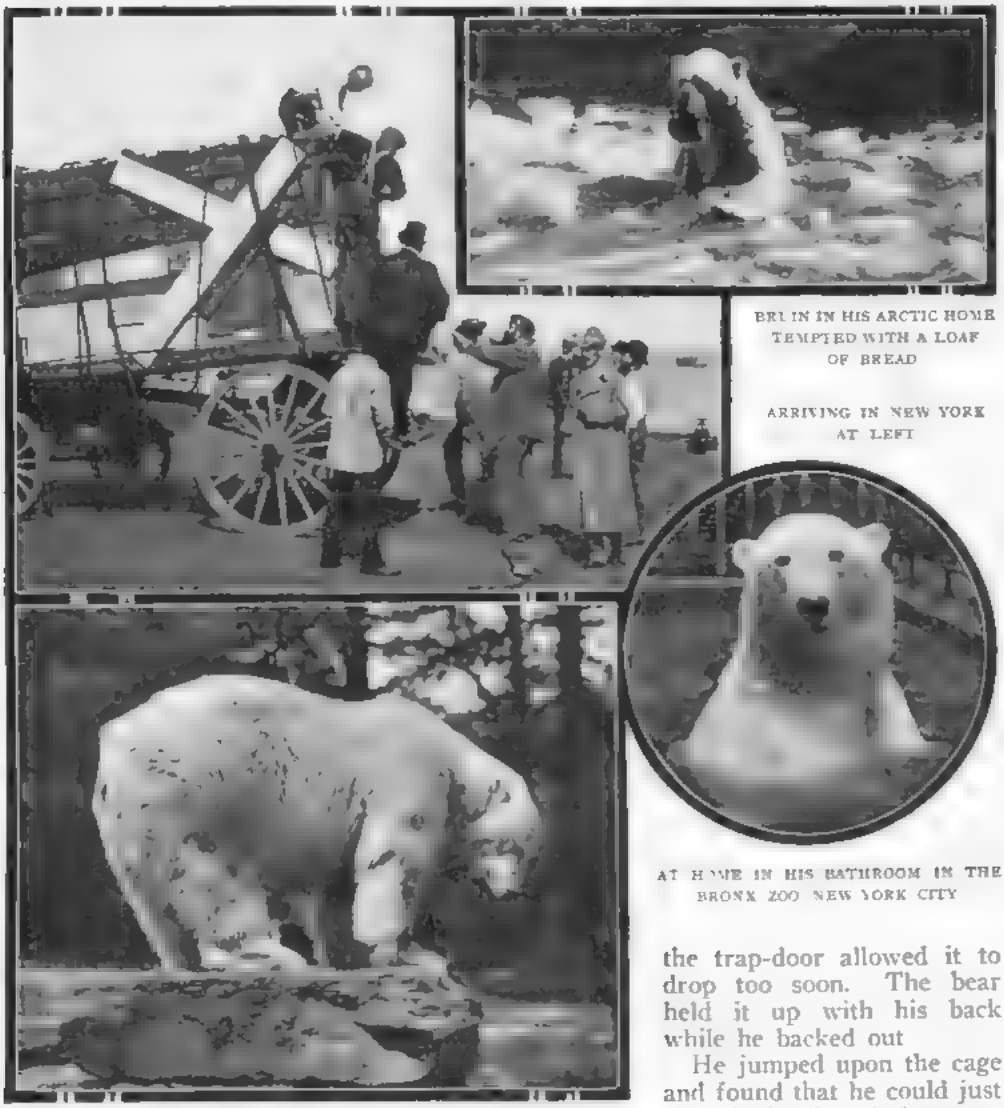
The ship was signaled to move into open water. On drawing alongside, a crane was swung, and in the twinkling of an eye the bear was hoisted into the

air and landed on deck, causing a wild stampede among the Eskimos. The swinging tackle of the derrick was brought into play and the raging monster was dropped down into the hold. All hands then rushed to the hatch to see the captive. He sat on his haunches, growling and champing. The next day he ate small pieces of bread and meat that were thrown down to him

The building of a cage ten feet long and six feet broad and high was commenced. The problem of how to place him in the crate then arose. After starving the bear for four or five days, a piece of walrus meat and a tub of fresh water were placed inside the cage and lowered to the bear. He started to enter, but the sailor who was working the trap-door allowed it to drop too soon. The bear held it up with his back while he backed out

He jumped upon the cage and found that he could just put his head and forepaws over the edge of the hatch and onto the deck, producing a stampede of Eskimos, sailors, and dogs. In the excitement the wheelman left the wheel and, for a moment, matters bordered on a panic

One of the Eskimo sailors abruptly ran up and struck the bear heavily on the head with a deck mop, whereupon, after giving a savage growl, the animal



BRUIN IN HIS ARCTIC HOME TEMPTED WITH A LOAF OF BREAD

ARRIVING IN NEW YORK AT LEFT

AT HOME IN HIS BATHROOM IN THE BRONX ZOO NEW YORK CITY

THIS IS ALL THAT NEW YORK CAN OFFER AS AN ICEBERG.

went back into the hold. It was fortunate that he did so, for had he gone overboard in the heavy sea that was running, it would have been impossible to have stopped and picked him up.

The cage was hoisted out and, after waiting another twenty-four hours, it was again lowered with bait of walrus meat and fresh water. The bear went in. The trap-door fell quickly into place and the bear was fast in his cage. The steam-winch hoisted both cage and bear to the deck

The construction of this was much too light, and on a dozen different occasions the bear very nearly escaped. He would seize the smooth side of the cage with his teeth and tear out splinters a foot long. This was finally overcome by nailing a spiked board over the holes he made, but Silver King was very careful to bite around the spikes.

One night, during a severe storm, the cage broke loose, and, as the water was running free off the deck, it looked as if he was surely going overboard. The alarm was sounded, and the entire crew responded. The men hurried to the cage and found that the bear had his head and shoulders out.

With a stout boat-hook they drove him back and boarded the hole. After this a sailor remained on watch day and night.

Almost the entire official staff of the Zoological Park awaited the whaling vessel when she arrived at City Island with her live freight. On deck, in his rude cage, Silver King, who towered nine feet on his hind legs and weighed 1,200 pounds, growled and charged the frail wooden sides. Several sweeps of his mighty paw tore through the planking. The boards were reenforced by heavier timber, but as his onslaughts continued, Mr. Rainey decided to administer chloroform. The anesthetic was sprayed again and again over his nostrils and, finally, he succumbed. The cage was quickly placed on a truck and hurried to the park.

When the bear revived it was not possible to drive or induce him from the cage. Finally, after attempts that lasted several hours, "Flip," a young walrus, was used as a decoy. Flip is tame and follows his keeper at command. He was led into the permanent steel cage where the bear could plainly see him.

As Silver King sprang into the cage after him, Flip was quickly withdrawn and the door locked.

RURAL GENIALITY IS SCRAPPED.

HOW lonesome will be the annual trip of Uncle "Si" and his wife to the county fair when this new rule of the division of the Pennsylvania Railroad having its headquarters at Camden, N. J., comes to be generally adopted:

> An employee on duty is forbidden to address a passenger or patron of the company as "friend," "stranger," "comrade," "brother," "sister," "neighbor," or by any other term of this character. When necessary, if the passenger's or patron's name is not known, use "sir," "madam," or "beg pardon"

With the abolition of the kindly term of "neighbor" the last touch of rural geniality passes out of railroading. A little while ago the president of the railroad on his own lines sat in the same car with his passengers and called them informally "friend," "neighbor" or "stranger," as the case might be. Now his grand private car is sometimes seen passing on the main line, and even the conductor is no longer a human being, with homely rural phrases on his lips, but a distant official, restricted to the formal "sir" or "madam." The urban passenger does not miss this human touch. He does not want it. A Kentuckian in New York trying to sell "timber toppers" from his blue-grass stock-farm, after various ineffectual attempts to relieve his loneliness, said to a "neighbor" in the subway, by way of trying again to strike up an acquaintance: "The thing that most impresses a stranger here in New York is everybody's indifference to him." The city man takes this indifference for granted, but not so the traveler on railroad lines where it is necessary, for the sake of "efficiency," to order the trainmen not to salute passengers as "neighbor," "friend" or "sister." When the countryman rides up to the county seat and not a conductor calls him "neighbor" there will be a brand-new lot of anti railroad bills introduced in the State Legislature.—*New York Tribune.*

SCIENCE MADE SIMPLE.

BY C. H. CLAUDY,

Author of "How Time Is Made," "The Quickness of the Camera," etc., etc.

An Up-to-Date Record and a Discussion of the Latest and Most Important Events in the World of Science, Written so as to Be Easy to Understand.

How the Numerous Parts of a Locomotive Work Together. Why an Engine, No Matter How Carefully Designed, Is No More Than a Collection of Many Pieces Until It Has Run for a Month with Every Rod, Bolt, Nut, Screw, Slide, Valve, Lever, and Wheel Coordinating Efficiently in Actual Road Operation.

C. H. CLAUDY

Photograph by Harris & Ewing Washington.

WHAT is a locomotive?

To the engineer, it is a live thing, a vast storehouse of power, a creature of impulse and whims, a servant to him who has mastered it, a demon to him who cannot control it

To the fireman, the engine is a devouring monster, demanding obedience of back and muscle, a thing to be cleaned and watched and oiled.

To the lay passenger, the locomotive is a means to an end, a thing designed for service, a mere matter of wheels and steam.

To those who love romance and admire force, to those who have vision for something beside and beyond the present, the locomotive is at once a puzzle and a delight, a concrete example of man's power over the forces and the materials of nature, and a symbol of progress and of empire. To such as these, the locomotive is no mere tractor, hauling busy people from place to place, and freight from factory to market — it is a thing typical of civilization and, with the telegraph and printing press, a great factor in the diffusion of knowledge

Admire it as he may, regard it with curiosity and awe as he undoubtedly does, the locomotive is usually a thing of mystery. Even to the academic scholar, taught elementally, and most incorrectly, that a locomotive is but a stationary-engine on wheels, the huge mass of steel and iron, of coughing steam and whistling air, of coal and revolving wheels, is something beyond a mere creation of metal and of power. To any with the gift of imagination, the locomotive has some of the attributes of sentient life

Let us take a locomotive to pieces, see what it really is, and how truly wonderful are its parts. Let us see how much more wonderful is the way in which they coordinate in one perfect whole.

Though a machine of a thousand

pieces, the locomotive can be easily considered as formed of three distinct parts. It possesses, first, a means for taking from coal the power created by unnumbered ages of sun and nature's chemistry, and transforming this power into controllable steam; second, it possesses a means for applying this steam-power to its wheels and make it available in the form of pull and motion; and, third, a means to control the power after it is applied to locomotive and train.

There are, besides, a hundred and one accessories to a locomotive — little conveniences, extras, and inventions, which make for economy, add to speed, or increase power, all a part of the whole, yet none, perhaps, are as vital as the three great parts mentioned.

The only practical way yet known of claiming the power in coal is by burning it. Some day, perhaps, man will learn how the force within the black diamonds of nature may be converted directly into controllable force, in the form of electricity, thereby eliminating the terrible waste of power which occurs when coal is burned to make steam. As yet, however, to burn coal and to use the heat to vaporize water, is the only method of extracting from the coal its force.

Fire-Box and Boiler First Essential.

So the first essential of the locomotive is the fire-box and the boiler in which the water is heated and where the steam collects, little by little, until it is under such tremendous pressure that man fears further to confine it, and allows it to escape by means of a safety-valve. The first engines used steam at a pressure of forty to fifty pounds to the square inch; to-day, pressures of two hundred and forty or fifty pounds represent the limit of man's confidence in his boilers.

The search for more power, for greater economy in operation, for greater speed in the locomotive, has brought to light many curious facts. The man in the street sees nothing to prevent increasing the power of a locomotive by increasing its size. Yet within certain limits the size of boilers, of fire-boxes, and of the engines themselves is fixed. To change the gage of the tracks of a country is a task so unthinkably great as to defy the most perfervid imagination. Four feet eight and one-half inches was accepted as the proper gage years ago.

For a time locomotive growth was rapid. Plain fire-box gave way to one with compound flues—tubes which run through the boiler to the stack, carrying the hot vapors and smoke of the fire through the water in dozens of pipes that the heat within them might be distributed to the water quickly and effectively. In some engines the search for larger heating-surface has caused the designers to make the walls and top of the fire-box of corrugated steel instead of plain, flat copper.

Importance of Flues and Draft.

Some flues are no longer plain, but are provided with plates or projections in their interiors to permit the gases the better to discharge their heat into the water surrounding the pipes, rather than into the air through the smoke-stack. In some engines, tubes carrying water extend across the top of the fire box in addition to those tubes or flues which carry the hot gases through the water in the boiler. The old natural draft of a short smoke-stack gave way to forced draft — the coughing exhaust of the cylinders is turned into the smoke-stack that a greater atmospheric suction may the more fiercely consume the coal.

Everything possible has been and is being done to the single end that for every pound of coal burned in the fire-box a little more steam may be generated than was possible with the last engine built. Not only does it mean economy, but that way lies power, and power means either greater speed or a greater load.

No one not a locomotive designer can conceive of the minute way in which this problem is studied. The thickness of the tubes, or flues, their diameter, their number, are matters of the most careful calculation. Obviously, the larger the tube, the greater its heating-surface. But with the larger tube less heat is brought in direct contact with the metal of the tube. The smaller the tube, the more heat it will extract from given gases.

But the smaller the tube, the more the soot and scale will collect — the more there is deposited on the inside of the tubes, the thicker are their walls and the less heat passes through to the water.

The greatest possible dimensions of fire-box, the exact number of tubes which give the best results, the exact size and length and thickness of those tubes, are as important in the designing of a locomotive as the most minute details of a fine watch, and as carefully planned.

These things differ with each and every kind of engine—the freight engine, the express engine, the mountain engine, the engine for switching, the engine for long hauls and the engine for short ones, the engine designed for heavy duty and that designed for light. Each presents its own boiler and fire-box problems, complicated with those of number of driving-wheels, weight of engine, speed required and power demanded, until locomotive boiler and fire-box design has grown to be an art and science totally distinct from the same art and science as applied to any other type of steam-engine.

Having designed the very best possible boiler, the largest yet most economical fire-box, and produced this first unit of a locomotive, one stands but on the threshold of the problems of both manufacture and description. To use the steam thus generated at enormous temperatures and pressures in the most economical manner, there must be some means of turning it into a definite number of driving-wheel revolutions per minute.

Cylinder and Rods Are Muscles.

If the fire-box is the mouth and stomach, the boiler the heart of the engine, then is steam its blood, and piston and cylinder and connecting-rods its muscles. Probably all who read this know that the power latent in compressed steam is applied to the wheels of a locomotive by being allowed to pass from a boiler to a cylinder in which is a movable rod with piston-head tightly fitting in the cylinder, against which the steam impinges, thus pushing the rod, which in turn applies that push to the wheels.

Between that simple explanation of the theory and the actual practise lies much knowledge, years of experiment, and many an interesting bit of information seldom considered.

It would be of little avail for an engine designer to work years to produce the most economical fire-box and boiler to the end that the greatest possible steam-pressure be extracted from the last ounce of burning coal, and then fail to conserve this potential energy in the actual engine or parts of a locomotive in which steam-pressure is turned into wheel revolution and tractive-effort.

In the early days of steam engineering locomotives were driven by the direct push of the steam from the boiler, acting between the cylinder-head on one side and the piston-head on the other. The valve which admitted the steam to the cylinder, in other words, was opened when the piston-head was at its extreme limit of motion, remained open during the entire thrust of the piston, and only closed when the piston had reached its extreme limit of motion at the other end of the cylinder.

Found New Force in Steam.

Now, however, we have learned that there is another force in steam beside its mere push from its compressed position in the boiler. Perhaps it is more nearly true to say that we have come to understand that this force of compressed steam does not end when the steam flows from the boiler into the cylinder. Steam not only pushes to escape when compressed—if given the opportunity, it struggles to expand and to continue expanding until it is no longer under any pressure whatever.

Modern locomotives, therefore, do not have valves arranged so that they admit steam with only the piston at the extreme limit of their strokes and continue to admit it during the whole stroke. Instead, steam is admitted to the cylinders of a running and properly driven locomotive *before* the piston reaches its limit of motion, and steam is cut off, from the boiler, long *before* the piston has gone the length of the cylinder in the reverse direction.

The effect of this is twofold. In the first place, admitting only a small quanti-

ty of steam into the cylinder conserves it. Instead of utilizing only the pushing force of the confined steam in the boiler to drive the piston, the expansive force within the steam itself is used, resulting not only in a great saving of steam, but in an actual gain in speed.

Nine Piston Strokes in a Second.

As to why steam is admitted behind a piston-head *before* the piston-head gets to the end of the cylinder, consider these facts about an engine with six-foot driving-wheels running a mile a minute. Six-foot driving-wheels have a circumference slightly over eighteen feet. They revolve in the minute necessary to travel one mile about 275 times. For every revolution of the wheel the piston makes 275 strokes each way in the cylinder. The piston has to stop and reverse its direction of motion 275 times at each end of the cylinder, or 550 times each minute altogether, or about 9 times every second.

The shock of this mass of metal stopping, starting, moving, stopping, and reversing again so many times is enormous. Admitting steam to the cylinder a little *before* each reversal not only cushions the blow at each end of a piston-stroke, but by opposing the expansive force of steam to the push of the piston, assists in stopping the piston before starting it back. This practise is technically called "giving the engine lead."

When does a locomotive do its hardest work? Running sixty miles an hour? Climbing a stiff grade? Hauling a heavy train? In none of these. At no time does a locomotive work quite so hard as when starting a train. The tractive-force necessary to start a heavy train is always greater than that required to keep it in motion. At this time an engineer does not cut down the steam. He lets as much as can fill each cylinder and utilizes all the push of steam from boiler.

Hooking Up for the Cut Off.

He does not, of course, allow this steam to rush in as fast as it can—that is, he does not open his throttle wide—but he does not let the valves cut off the steam before the stroke is completed. After the train is running, however, he gradually "hooks up" the engine, so that when it is under headway the steam is cut off in the cylinder long before the stroke is finished.

How this is done brings us to an examination of the "link-motion" and the valves, the most essential and delicate parts of a locomotive. The valves which admit steam to the cylinders are operated by means of a valve-gear. This valve-gear consists (essentially—it differs widely in different designs) of two eccentrics mounted on the shaft of the driving-wheel, which work rods ending in a "link," or slide. To this slide is connected the valve-rod proper. The link is altered in its position by means of a reverse-lever in the cab.

When the lever is as far forward as it will go, the link is down as far as it will go, and the valve in the steam-chest admitting steam to the cylinder is moved entirely by one of the eccentrics, the other running idle and doing nothing but rock the free end of the link. When the lever is pulled back as far as it will go, the link is up as far as it will go, and the valve-rod is controlled and worked entirely by the other eccentric.

The first eccentric is so arranged that it operates the valve to admit steam to drive the engine forward. The second eccentric is so arranged that when it controls the motion of the valve-rod, steam is admitted to drive the engine backward. The lever controlling the link is therefore known as the reverse-lever.

What Valve Motion Means.

If the lever be anywhere between its farthest forward position and its central, or neutral position, the engine will still go forward. The further the lever is pulled backward, the less the forward-eccentric affects the valve, and the more it comes under the influence of the reverse-eccentric. The practical result is to shorten the time the valve is open.

As the train gathers headway the engineer gradually pulls the reverse-lever back, thus "hooking her up" and shortening the time of opening of the valve in the steam-chest, until, when under full speed, a well-driven engine is getting steam from her boiler into her

cylinders but a fraction of the time of each stroke, utilizing the expansive force of the steam to finish out the stroke.

The designing and manufacture of valve-gears is a most important part of engine practise. By a good valve-motion the designer effects economy of operation, conserves coal, adds to speed and power, makes his engine flexible, saves wear and tear in fact, the valve-motion of an engine is one of its most vital parts, and one of the earliest things the man in the cab has to learn is how to set his valves and to operate them with a high degree of intelligence and a thorough-understanding of just what he is doing when he hooks her up.

Speed Impossible without Air.

Having made our steam, admitted it with economy to our cylinders, utilized the force in it, and hurled our massive monster at sixty miles an hour down the track, how are we going to stop it? How are we going to control this mighty mass of metal, these tons on tons of steel, projected almost with the speed of a bullet down the slender steel rails, and tearing along with a force so great nothing can stand before it, not even time and distance?

By the air-brake, of course. Every one who has ever traveled on a train knows that the air-brake normally stops the train. We are all familiar with the whistle of escaping air after the train has come to a stop, and have felt the little lurch of a well springed car when it settles back on its trucks after having been suddenly checked by air. Few realize, though, that if there were no air brake, no such thing as express-trains, nor even a schedule, would be possible.

It is the air brake, more than any other thing, which has made modern speed possible. Not only to stop the train when necessary, but to control it on curves, must the engineer keep his hand on the "air"—not only to prevent accident, but to make quick runs feasible, must he have some means for stopping his monster projectile at least with the same speed at which he can start it.

Thus the air-brake came into being—most flexible of power, most reliable of apparatus — reliable and flexible both, because simple.

The air brake, in principle at least, is nothing but the use of a steam-engine principle with compressed-air as power. Brakes are set by pistons in cylinders being pressed outward by the power of compressed-air. The wonder of the air-brake is not in the fact of this principle of pressure in a cylinder being applied to putting a shoe against a wheel-tire, but in the fact that Westinghouse realized that steam would not do and air would do.

A brake on every car is essential; to apply brakes only to the engine would do little good. The mighty weight of the train behind would drive the engine, even with locked wheels, along the rails. And steam cannot be conducted long distances, or through flexible pipes, in all weathers and remain steam. Air can. So every car on a flier has tanks of compressed-air beneath, as well as those on the engine. When the engineer turns his wrist, the compressed-air in every tank rushes to its appointed duty, applies the shoes to the wheels, and slowly or swiftly, as the valve has been turned much or little, halts the train.

Engines, of course, have independent brakes, for the engine must often run alone, but it is the brakes on the cars which stop the train, not those which apply only to the drivers of the engine. After the engineer applies his brakes, a twist of his hand releases the air and it whistles out into the atmosphere. Then the brake-beams are pulled away from the wheels by another effort of the air.

Power of Engineer's Hand.

You may have seen a passenger-train, and some freight trains, made up or coupled together. You will have noted that in addition to fastening the cars together, that the one may pull the other, certain flexible pipes are also joined. These are the air-tubes, for the source of the compressed-air is a pump on the engine. As every use of the brakes exhausts some of the air under pressure in the tanks on the cars, some means must be at hand to supply more pressure.

This means is the steam air-pump,

which coughs and jerks, often when the train is at a standstill, filling the tanks to their normal pressure of about ninety pounds to the square inch. This air-pump is automatic. It starts immediately with the release in pressure and stops when the pressure is what it should be. All the engineer must do is to use his air-lever.

Even with our perfect boiler and fire-box, our delicate, carefully considered valve-gear, our mighty pistons, rods, drivers, and our controlling air-brake, we have not a complete engine. For an engine, a locomotive engine, must mount all this mechanism and all this weight on wheels, carry it all in a rigid frame, and sustain the shocks of starting, stopping, rough track, bumps, curves, changes of temperature, and so on.

Injectors Feed the Boiler.

Into the technicalities of carriage building we cannot go now, suffice it that the steel frame must be strong and rigid and capable of bearing immense weight without possibility of breakage, yet without being too cumbersome and large, so that the machinery may not only have room to work, but be accessible for inspection and care

A hundred smaller parts has every locomotive, little things never considered by the public. A whistle, for instance, is in each cab, not the mighty blast on the boiler which shrieks its warning far ahead, but a tiny little air-whistle by which the conductor of a train conveys his signals to the engineer. It is this whistle which is blown when the familiar cord, running the length of the train, is pulled by the conductor.

In every cab will be found two peculiar apparatuses, called injectors. Water from the tender must be forced into the boiler somehow. It might well be wondered how a pressure of two hundred pounds of steam is adequate to force water into a boiler against a pressure of two hundred pounds of steam, but by an ingenious arrangement, the momentum of the moving water and steam is sufficient. The injector is as necessary to the engine as the daily meal to the laborer—deny the engine either coal or water, and its power dies.

There is a sand-dome on the engine, that the engineer may drop sand on a slippery track. There is the throttle, which controls the steam from boiler to steam-chest. There are gage-cocks, which, in case the water-glass should break, show the engineer how much water is in the tender. There is the air-gage, registering air-pressure, and the steam-gage which tells him the steam-pressure.

There is the oiling system, by means of which oil is distributed to the various moving parts of the engine. There is the valve by which the cylinder-cocks are opened, that fresh steam may discharge the water formed from condensed steam in the cylinders, that it may not press against the cylinder-head when the piston moves, and, by the curious incompressibility of water, break open the cylinder

There are a dozen, a hundred, one might almost say a thousand, of these little accessories to a modern locomotive, so that a proper understanding of them, their relation to each other, their best and most efficient use, are alone a study of some years. Couple with this the need of learning the science of railroading, as well as that of steam engineering, and you may well gain an increased respect for the man in the cab.

Our concern here is with the way its parts fit together. A collection of boilers, wheels, rods, valves, steam, water, and coal, does not make a locomotive. Each and every part must be made with relation to every other part. The pistons of a Mallet compound are not for the switching-engine. The valve-gear of a freight-puller is not for an express. The boiler of a local and that of a Mogul are different. Each part of each engine must be designed with reference not only to every other part, but to the work the engine is to do, the place it must fill

When this is done—when the product of the designer and the inventor, the manufacturer and the workmen, the factory and, finally, the paint-shop, is finished, it still represents only a hope. Not until it has run, and run well, for at least a month, can it be truly considered a successful locomotive. Every part must work in unison with every other part, every device must play its part without let or hindrance.

The Danger Signal.

BY JAMES FRENCH DORRANCE.

CHAPTER IX.

The Race Is On.

THE day of the race between the speed trains of the rival roads found the entire State acutely interested. The river valley was racked with partizanship. There seemed to be no neutral ground or party. Every one was either a "Ramapoo" or an "East Shore."

To many the test between the Minute Mile and the Bullet was a sporting proposition and thousands of dollars had been wagered on the result. With the general public the East Shore train ruled a slight favorite. This was solely due to "jockey preference."

The equipment was evenly matched and the respective tracks equally difficult, so the wiseacres held that the finish depended on the skill with which the engineers pushed their heavy machines.

Considered from past performances, Steve Inglerock had a decided advantage over Bland Slade. The case was almost one of professional *vs.* amateur. The veteran had been making speed for years and had a vast fund of experience on which to draw in case of emergency.

While it was true that Slade had drawn the flier for a week with a fair average, he was none the less a fledgling and practically untried. There was a possibility that he would go to pieces in the excitement of an actual race.

But it was the cock-sure attitude of the East Shore officials that caused the most nervousness in the Ramapoo ranks. Under the management of the all-confident Smiley, the men of the general offices had raised a pool of $20,000 and had publicly asked the Ramapoo officials to cover it

The sum required to cover the wager had been forthcoming only when the young vice-president of the Ramapoo had been taunted by President Grafton of the East Shore with lack of confidence

There were several nervous conferences at the Ramapoo offices, to the final one of which Slade was summoned.

"They've got something up their sleeves," declared the general manager, looking around the circle. "What is it?"

The vice-president said that it was a bluff backed by nothing but a four flush.

"They have Inglerock," observed Slade. "He has no place in a four flush."

"And I've played the game too often with Smiley not to know that he waits for the cards," put in MacCarthy of the motive-power. "He's a sure-thing player."

"I hear that Little Bill Hawley is going to fire for Inglerock," added the young engineer. "He quit me after the second run of the Minute Mile."

"That's due to an old trick of Smiley's, probably," Beatty asserted. "He's so crooked he can't carry a corkscrew in his pocket. I haven't a doubt that both Inglerock and Hawley were bribed to jump at this particular time."

"They haven't by any chance made a proposition to you—have they, Slade?" In MacCarthy's tone there was neither insinuation nor suspicion.

"That they have *not!*" There was that in Slade's face which said that "making him a proposition" would not be healthy for the man who made it.

In answer to other questions he added that he was satisfied with his new fireman and that Miss Nancy was tuned for the run of her life.

"I will put a double guard on her to-

night," MacCarthy assured him, "and we'll have an eye on the fireman. If you like, I'll ride the engine with you to see that he attempts no tricks once we are under way."

"Just for your own satisfaction, you'd better set a watch on me," suggested Slade.

"We've got to trust some one, man," returned Beatty with a grim grin. "But I would give a month's pay to know what Smiley knows. It's something more than having Inglerock in the cab."

The vice-president asked if there was any chance of the East Shore pirates disturbing the Ramapoo tracks, and suggested sending a pilot engine ahead of the Minute Mile. But the practical railroaders assured him that their rivals would not dare trifle with the train's human tonnage.

"It's largely up to you, Slade," said MacCarthy, as they left the conference "If you hold your nerve, this run will be the making of you. I'm sorry we got into it, for I've always leaned to a safe road rather than a fast one. But we are in up to the muzzle, and if we don't pull out ahead we'd better quit railroading."

Slade jumped a switch engine and rode down into the yards to have a last look at Miss Nancy, on whom so much would depend in the trial

In spite of the unnerving experiences of his first week in fast company, he was actually looking forward to the race with a certain fierce eagerness. It was the chance for which he had longed during the weary, back-straining years he had handled the scoop. He almost welcomed the difficulties that presented themselves, for without the difficulties the test would not have spelled such a world of opportunity.

His natural confidence in himself had been increased by the attitude of the officials of the road. There had been time in that week between the initial run and the race for MacCarthy to have shifted engineers. Inglerock was not the Ramapoo's only veteran who had a reputation for speed reliability. Bland had half expected that they would find some excuse for withdrawing him, at least for this trip on which the honor of the road was staked.

He did not know that the vice-president and others had suggested such a move, nor was he aware of the stoutness with which Beatty and the motive-power chief had stood by their theory that youth was preferable in a speed cab. The fact that he had held the run was enough for him.

For another reason he was joyfully anticipating the start. Griselda Inglerock had expressed a desire to be at the Ramapoo terminal when the Minute Mile pulled out, and he had secured for her a pass through the gates. She would be his mascot.

Although he would scarcely have opportunity to speak with her, he would have the inspiration of her presence and her smile

Their understanding had been made complete at the last interview he had with her, a secret meeting in one of the little pagodas at the edge of the bluff.

Griselda had agreed to put a period to the uncertainty of their affairs, if he won the race to Capitol.

The argument was that such a feat would well fulfil her father's original demand that he become a successful passenger engineer. If the veteran still opposed Slade, as he doubtless would in the sting of defeat, the girl would take the matter into her own hands.

In short, if the Minute Mile beat the Bullet, they would be married at once.

Slade was quite ready, to-day, to agree with the man who first said there was no such word as "fail." He was certain it could not be found in his vocabulary on this occasion. He smiled as he thought of all that was staked on the 180-mile run along the crooked river.

The Ramapoo Valley Railroad, as a corporation, stood to win the prestige that comes from holding a speed record. The officials might double the $20,000 they had put into the pool. But the grand prize, the incomparable Griselda, was his if the slatted nose of Miss Nancy was first when they reached the Union Depot at Capitol.

Yet the very start of the race was inauspicious.

Slade backed into the terminal with a final whistled challenge which he hoped might carry across town to the East Shore depot where Inglerock was presumedly in the act of hooking up the Bullet.

Then he looked about for Griselda.

The Ramapoo terminal was crowded. The crowd was thickest about the engine, as power is ever attractive. For the first minute or two the young engineer was not worried when he failed to pick out the smiling countenance he sought from the sea of faces. But when a second and third survey failed, his own smile of anticipation faded

"Her father must have suspected," he muttered to himself

The next moment a Ramapoo youth, who had often acted as their messenger, sided up to him and, with a furtive movement, passed him a note.

"She said to give you this," he explained in a whisper. "Say, Mr. Slade, couldn't you smuggle me on the engine? I want to see the race."

"Not this trip, Sammy. Some other day," answered Bland, with a sympathetic smile for the lad's eagerness.

Then he reached up for his oil-can and went to the other side of the engine, where he might run through Griselda's note without an audience.

At best her chirography was a distinctive puzzle and this note had evidently been written in a hurry, but his eyes read easily:

> Isn't it too disappointing for words! Father insists that I go this morning to visit Aunt Mary at Half Way Locks. I'm afraid he suspects that I'd be at the terminal to see you start. But take heart, dear one. Half Way is on our side of the river, and I'll surely be at the trackside to cheer you on. I'll stand on the bank just below the signal-tower. If you see me—the old whistle. I'm quite devoid of filial feeling under the circumstances, so I hope you win. But, big boy, *do* be careful. I'm afraid, so afraid—of I don't know what.

He grinned dubiously at the thought of being careful in such a race. Then he crammed the note into the pocket of his shirt over his heart.

Her written words were not so inspiring as her whisper and smile would have been, but they were something. He would whistle their sacred "*toot! toot toot! toot!*" at the signal-tower below Half Way Locks whether or not he had time to look for her.

Slade swung himself into the cab as MacCarthy settled himself on the front end of the fireman's shelf.

"How do you feel, son?" asked the motive-power chief.

"Like a winner, boss," was the hearty answer.

He stuck his head out the window, caught the signal, and gave Miss Nancy the steam.

The race was on.

CHAPTER X.

Dread Rubies of the Rail.

STARTING on the minute of five o'clock, the rival speed trains felt their way through the tangles of their respective yards toward the outskirts of the city.

They gathered speed as they went, and when they came into view of each other some four miles out they were thundering along at nearly top speed, with the river between them.

The first sharp yelp of defiance came from the whistle of the long, lean Baldwin which Inglerock was driving for the glory of the East Shore.

A slight advantage lay with him. From his seat on the right he could look across the river at the tracks of the opposition.

At the sound Bland Slade leaned down and peered across his cab for a single glance at the train he intended to beat into Capitol. Then Miss Nancy's whistle sounded her disdain of anything else that ran on wheels

Throwing in extra steam, he gave her a ruffle of white on either side, just to show his rival that he was ready for any kind of running.

Perhaps nowhere in the world are two railroads more nicely paralleled for exciting contest from the spectator's point of view than the Ramapoo Valley and the East Shore. The river is just wide enough to afford the passengers of one train a satisfactory view of the rival on the other bank

To-day the element of uncertainty entered to a delightfully aggravating degree. First one train and then the other would edge away from the bank and disappear for a time behind some rocky promontory.

Although the total distance from Metropolis to Capitol was identical down to the fraction of a mile, there

were places where one train or the other seemed to have the advantage of cut-offs. It was like a horse getting the rail on an oval track, except that, on this elongated course, the "rail" seemed first on one side and then on the other.

There was no shortage of spectators on this occasion. Both trains were crowded to the last seat; the Bullet with guests invited in honor of her initial run, the Minute Mile Flier with paid passengers, many of whom were traveling solely to enjoy the real thrill of the occasion.

Dusk soon settled down, but not to blanket the excitement. Both trains were brightly lighted with electricity, and their respective positions could be gaged almost as accurately at night as in daylight.

Indeed, the outside gloom made the race even more spectacular for those who were participating from the coaches.

Each powerful headlight showed stretches of the rival course, and the red glare of the fire-boxes lighted up each cab every time the fireman yanked open the door to fill up the holes which the forced draft of the excessive speed was continually tearing in the beds of blazing coal.

Every passenger had his watch out keeping time. The officials, who were scattered through the coaches, were eternally importuned for detailed schedules, and before the trains were ten miles out they had two score self-appointed timekeepers.

First one train seemed to be gaining. Then a change in the road would put the other slightly in the lead. The best the timekeepers could do was to note the stations which flashed past and compare their watches with the schedule.

As near as could be figured, both trains were running up to required time. First the Minute Mile would seem to have gained its length, when the faces of its passengers would brighten and they would shout congratulations back and forth.

When the lead of the Ramapoo train seemed to be wiped out and the East Shore's speeder boomed ahead, the passengers would shake their fists and jokingly ask the conductor if he couldn't telephone the man in the engine to run a little faster.

Up in Miss Nancy's cab Slade, crouched over the throttle, and MacCarthy, clinging to the fireman's shelf, appraised their position with split-second accuracy.

They had no time to watch the other train and did not worry at the Bullet's seeming leads nor rejoice over her apparant lapses. They had ways of testing their own speed which did not require the comparison of watches or mile-posts.

The superintendent had no word of criticism for the new fireman, who was as willing a worker as the most greedy steam eater could desire.

He moved about the floor of the cab as though he were back of a stationary boiler. He had reduced the knack of firing to a science and with a twist of the wrist could send the coal either to the right or left or straight to the head of the fire-box.

He knew that Miss Nancy in no way resembled a camel and, as she approached the track-tanks, would turn on a pressure of air and drop her scoop into the water. And when the tank in the tender was full again another turn of the air would automatically take up the scoop.

As often as the furnace door was opened and the cab's interior flooded with a reddish glow, MacCarthy would turn admiring eyes on Slade, who seemed to have become a part of the pulsing machine. The way he jockeyed for every advantage on curve, grade, or tangent was a revelation to the older man.

"He'll do it!" the official would mutter to himself. "He's the lad with the nerve!"

As they approached the tower just below Half Way Locks it beckoned them on brightly.

"White!" called the superintendent as he caught the gleam.

"All white!" echoed Slade, and gave the whistle a peculiar intonation.

For just a second his eyes left the track for the embankment alongside the signal-tower and a glance at the little group which stood there.

He was sure he recognized a slender figure in white.

Miss Nancy lunged at the curve as though determined to jump it, then seemed to change her mind at the last

second, lurched back, and shook herself free for the tangent ahead.

But even as she entered upon her fresh spurt two red balls of light sprang out of the darkness a few yards ahead.

Slade saw them the second MacCarthy shrieked "Red!"

He recognized them as the tail-lights of a train on the track which was supposed to be clear for him.

There was not a second of hesitation, even for the thought that it was foolishness to stop his seventy-mile thunderbolt in that distance.

In an instant he opened the sand, applied the air, and closed the throttle to choke her down.

Having done all man could do to stop the onrush and avert the hand of the grim destroyer, he gazed as one fascinated at the fire which flew from the drivers on the sanded rails

The fireman recovered his balance and gave one startled look ahead.

"Good God!" he cried. "Jump!"

He followed his own advice and leaped into the night

MacCarthy, stunned by his fall and half covered with an avalanche of coal, did not hear.

Slade stared straight ahead, making no move, not even to brace his body for the impending crash.

He was wondering vaguely how many of the two hundred in the coaches behind him would escape when the flier crashed into whatever "fool train" blocked the track ahead.

Miss Nancy rushed on as though anxious for her junk heap ticket. Only a miracle could flag her from certain destruction.

CHAPTER XI.

At the Crossover.

IN the last moments the twin red lights seemed to Slade to be the glaring eyes of some monster crouched on the track just ahead, waiting to devour him.

Dimly, in a way that was almost subconscious, he realized that they hung to the sides of a freight-train caboose. A flash of resentment passed through his mind.

What right had a freight on his track, blocking the Minute Mile on the run of her life? Didn't he have in his pocket a copy of a train-order which told him the track was clear all the way to Capitol?

That freight should have been laid out. Some one must have blundered.

But the lights, the dread rubies of the rail, were now at hand. Breathing a prayer for Griselda, he shut his eyes.

He was next conscious of a mighty lurch which tossed him out of his seat and left him a bruised heap on the deck.

He knew what that meant. Miss Nancy was leaving the rails!

But it was odd! Indeed, it was most peculiar that he had not felt the shock of compact when she dipped her pilot into that rear shack.

Then jerk followed jerk, tossing him from side to side as though he were a lump of coal. Was Miss Nancy never going to find her resting-place in the ditch?

Suddenly his mind cleared. She hadn't left the track at all, but was running on firm rails, her coaches trailing behind her.

He scrambled to his feet, realizing that for support in all the jolting he had been clinging to nothing more secure than the handle of the fireman's broom. This he cast from him and got back to his throttle.

A glance told him that the Minute Mile was running on the siding on which the slow trains were ordinarily laid out to permit the passing of the fliers. Alongside was the stalled freight.

The brakes were grinding down and the reverse was beginning to make itself felt. A few yards more and the speed train would come to a full stop.

"What right has this train to come to a stop?" he muttered desperately.

A spirit of revolt seized him. With a single motion he admitted the excess air-pressure of the main reservoir into the train-pipe and the brakes were released. He threw the throttle over and Miss Nancy was again under headway. It had taken but a few seconds. Another moment and they passed the head of the other train, for he caught a glimpse of the engine-crew at work on some repairs.

Slade was thoroughly familiar with the siding on which he was running and knew that it cut back into the main track

at the other end. If the switch was properly set, he could speed on without coming to a stop. If it wasn't, there would be but a moment's delay for its turning.

The race wasn't lost yet — not by a hundred chances! And he was willing to take them all

His first glimpse of the switch-light gave his heart an exultant bound, for it showed that he had way to the main line. He fed the engine a trifle more steam and took the crossover as swiftly as he dared.

He could remember no such feeling of excitement as that which surged through him when he saw the clear track stretch out before him. He crowded the pistons and Miss Nancy was again the racer.

"What happened?"

This question, howled in Slade's ear, brought him to the realization of a number of things. The first was that MacCarthy, whom he had entirely forgotten in the stressful moment, was standing there staring at him with an expressionless face.

Next he noticed that the superintendent was injured, for blood was trickling from a nasty gash in his forehead.

"What happened?"

"A cattle train broke down in front of us," Slade shouted back. "We got a crossover instead of the ditch, and we're back on the main line now. We didn't lose much time. We can make it up"

The lights of the town of Half Way flashed up at the moment and, without diminishing speed, the Minute Mile threw them behind her.

"What became of the fireman?" The superintendent asked the question unsteadily, as he peered about the cab and cast his eye over the tender.

For a second fright clutched Slade's heart. He glanced at the steam-gage and saw that already the pressure was diminishing. He remembered his helper's frightened shout just before they took the siding.

"Must have jumped," returned Slade with a groan. "Here, you can run an engine! Take the throttle. I'll keep up the steam."

For a moment MacCarthy peered at him through the dim glow of the cab, as if he did not entirely comprehend. Then he shook his huge frame.

"No!" he shouted, as he jerked off his coat and vest. "You run her; I'll do the firing!"

He seized the scoop and threw open the door of the fire-box. He had not forgotten the trick, and Miss Nancy got her meal in short order. The indicator on the steam-gage steadied and then started to climb again.

The vicinity of Half Way Locks was the only stretch where the Ramapoo tracks cut away from the river for any considerable distance. For six or seven miles the East Shore tracks could not be seen. The thrilling experience of dodging the freight had taken place behind the scenes, so far as spectators on the rival train were concerned.

But the Ramapoos were equally in the dark as to the progress the Bullet was making. Had she held her speed and gained an overwhelming lead? Anxiously the two in the Minute Mile cab awaited the compound curve which would bring them again to the river-bank.

It did not take long, though anxiety made it seem an age. Their powerful headlight picked up the glistening ribbon of the river, and far ahead of them on the other bank they could see the lights of their speeding rival

Evidently Inglerock had enjoyed steady going and had a lead of, perhaps, two miles!

"Crowd her, son!" shouted MacCarthy encouragingly, as he turned again to feed the furnace

Slade watched him for a moment as the furnace glare made the cab interior brighter than day. His face was streaked with blood and blackened with coal-dust. He had divested himself of collar and tie and rolled back the sleeves of his white shirt. His lips were set; his face grim with determination.

But there was now no uncertainty about his step, and he swung the scoop with the energy of renewed youth. Evidently MacCarthy would stand the trip out. Slade marveled at his nerve.

For a time he gave all his attention to getting the last revolution of speed out of the big engine. Between Riverdale and Hopetown there was a ten-mile tangent with the grade in their favor.

On the opposite bank the Bullet was approaching the crookedest stretch of

her run. It was here, if anywhere, the Minute Mile must make up the time lost in taking the siding.

She was noisy when living up to her name, making the miles in sixty; but now, with the speed almost doubled, she sounded like the factory in which her boiler had been hammered together.

Slade whipped out his watch that he might know exactly what she was doing. The miles were reeled off in 37, 38, 40, 38, and 37 seconds. He was smiling as he replaced his timepiece.

Never had he ridden so fast before. Now he was certain of the overhaul

A feeling of wild recklessness, utterly foreign to all his engine training, took possession of him. For a time he was as much a speed maniac as the most careless auto racer.

He had no seeming thought for the lives entrusted to his care. His orders said the line would be clear for the number by which his train was known. He would take that for granted. The sharpest curves held no threat for him in his present mood and he took them at a pace which must have made the rails groan and the spikes move uneasily in their wooden beds.

The signal-lights must have all been white, for nothing happened. He knew that, after the miracle at Half Way, he was color-blind to red, deaf to anything that meant delay.

Presently they were abreast of the Bullet. He glanced again at MacCarthy. The older man was sprinkling the coal that remained in the tender as carelessly as though he were a regular fireman on an ordinary run. There was steam enough —and to spare.

A dozen miles nearer Capitol, when they seemed to have established a trifle of a lead.

After a few miles more of the regardless pace, they were certainly ahead Slade felt MacCarthy's hand on his shoulder and his hot breath on his ear

"That signal below Half Way," the superintendent shouted.

"What of it?"

"Should have been red with the freight stalled in the block."

"Showed white," declared Slade

"I couldn't seem to remember," the official said, as he returned to his shovel.

A shriek of the whistle announced that Slade had made out the lights of Capitol reflected vividly on a black cloud in the heavens. They entered the last stretch. The Bullet was behind them, how far they did not take the trouble to determine.

They darted into the yard limits with a mad Slade at the throttle.

He had witnessed a miracle and cared not for rules or running regulations. Miss Nancy flew over the switches, darted past blustering switch-engines, and dodged through a sea of freight-cars.

Her wide-open whistle sent her cry of victory echoing for blocks

Almost to the shadow of the big station he let her run, determined to clip the last second. Then he choked her down roughly and brought her to a stand, hissing and panting.

As he slid off his seat by the right window an intense weariness swept over him. For the first time he realized the strain he had been under. It took a shake from MacCarthy to bring him to himself.

The superintendent's grin was almost diabolical, embellished by his facial decorations. He was holding out a grimy hand of congratulation.

"Some running, son," he said.

"The credit is mostly yours," Slade answered fervently.

The crowd about the cab was calling for the engineer. Slade swung to the platform as the general manager came running up at the head of the official pack.

He was surrounded. Some clapped him on the back. A dozen tried to shake his hand at once. Their spoken congratulations made an unintelligible babel

Suddenly there came a roar from a neighboring track and a rush of disturbed air.

The Bullet had arrived.

"You beat him by four minutes and our own schedule by seven," shouted Beatty. "Great work, Slade!"

A little man, whose face was not beaming, edged through the crowd and caught the general manager's attention. Slade recognized the chief despatcher and saw him hand over a service message. Without knowing just why, he watched Beatty's face as he read and saw his expression ominously change

"This is serious," he heard him say to the despatcher. "Wait a minute."

Beatty came over to the young engineer and handed him the message.

"Read this," he said.

Slade read a message from the towerman below Half Way who reported that the flier had deliberately run past a stop signal into a block that held a stalled extra freight.

A wreck that would have been appalling had been averted by the train taking the crossover. Even then the speed train had not stopped to ask for release or orders. It chanced that the conductor and rear brakeman of the freight were in the tower at the time, and they supported the signal man in his contention that the block-light had been set at red.

The engineer of the flier, they asserted, had utterly disregarded it.

"Are they dreaming?" asked Beatty of Slade sharply.

"There was a stalled freight on the main line just as certainly as we took the crossover. Didn't you feel the jolt? But I ran past no stop-signal."

A messenger with another telegram interrupted. This was also for Beatty from Half Way, and read:

> Conklin, fireman of the flier, picked up alongside track with broken leg. Says he jumped when he saw tail-lights of extra freight. Will recover

"You didn't draw her from Half Way alone?" demanded Beatty sharply. "Who fired for you?"

"MacCarthy—good old MacCarthy—fired like a Trojan," answered Slade, with a catch in his voice. "He deserves the credit for the run, and he'll tell you that the signal showed white, that we hadn't a hint until we bore down on the reds of the freight."

They both looked about for the official, whose absence had not been noticed in the excitement. But they did not find him nor any one who remembered seeing him after the Minute Mile's arrival.

Beatty was in a quandary. He was so elated over winning the race that under ordinary circumstances he would not have inquired into method.

But there was the public service commission, which had a leaning toward the East Shore! They would be certain to hear the report of the disregarded signal and would call a public hearing.

"Beat them to it," had been the general manager's motto in the past, and he decided that he must follow it in this case

"We will have to go into this, Slade," he said soberly. "Report at the division superintendent's office at eleven in the morning."

He dictated messages to the tower and train men, ordering them to report at the same time, and detailed a couple of men to search for MacCarthy, whose unexplainable disappearance seemed the most puzzling factor in the dilemma.

Dodging the group of fellow railroaders at the roundhouse who waited to congratulate him, Slade lost himself in the crowd. He signed the register and hurried out of the station. At a hotel across the street he secured a room and left a call for ten o'clock

"On the carpet after a run like that!" he muttered, as he closed and locked his door.

Utterly exhausted, he flung himself on the bed.

CHAPTER XII.

Clearing the Track.

A STERN-FACED group of officials awaited the hour of the inquiry in the division superintendent's office next morning.

"I'd rather be shot than probe into this mess to-day," observed Beatty, who sat behind the superintendent's desk "Just think what a run that youngster made!"

"And the wo of the East Shore," added the division chief. "Every one of the generals sneaked home on the midnight. They hadn't a word to say."

"But suppose the flier had not taken the crossover!" said the vice-president severely. "Imagine what would have happened! Most of us would have been in the hospital — or worse — and the Ramapoo would have had a blow from which it would never have recovered Running past a danger signal deliberately is the most serious crime an engineer can commit. Better no speed at all than trifling with the lives of passengers."

"Yes, it's serious," agreed Beatty aloud. "Hypocrite!" he thought to himself as he spoke.

The superintendent's mutterings that you couldn't race trains and win without taking chances were too low for either of the others to hear.

The vice-president asked if anything had been heard from MacCarthy.

"Not a word," returned the general manager. "So far as my men can determine, no one saw him about the station. That is what makes it look so bad for Slade. MacCarthy was in the cab and must have seen the color of that signal light. He's soft-hearted and fond of Slade. Besides, he had set his heart on winning this race. Naturally he wouldn't want to have a voice in the inquiry.

Beatty ceased talking as Slade was ushered in. His face was pale, and slight rings under his eyes told of the strain he had been through

"Good morning," said Beatty in a non-committal tone.

The division man nodded cordially, but the vice-president seemed to be busy with a report which he had picked up from the desk.

Official inquiries on the Ramapoo road were conducted along court lines. The man on the carpet was treated as a defendant and had the right to hear all the testimony. The witnesses were kept in another room.

Slade sank into the chair which he knew would be his through the ordeal. In an undertone he asked the division man if anything had been heard from MacCarthy The negative answer made his expression more grave.

No time was wasted with preliminaries, for Beatty always rushed disagreeable tasks

The tower man was called from the outer office. Instead of being sworn, as in court, he was warned that anything but the truth meant dismissal and was ordered to go ahead.

He told of the breakdown of the extra freight as it was about to take the siding, that the Minute Mile might have a clear sweep. The accident had happened half an hour before the flier was due and, as a precaution, the block had been immediately closed against her.

Every effort had been made to clear the track, but in vain. Then the switch had been set that the passenger-train might pass with as little delay as possible. The conductor and rear brakeman had visited the tower to make certain that the block was closed and the danger signal given.

The Minute Mile had approached at full speed and, though the brakes were grinding, the crossover was taken at a dangerous speed. The tower man said he considered it a miracle that the flier had not taken the ditch.

"It was a miracle!" muttered Slade, who had been a most attentive listener.

The conductor of the cattle extra was the next witness. He corroborated the tower man in every important detail. His brakeman was telling the same story, when there was a surprising interruption.

Sandy MacCarthy strode into the room with a most businesslike air. There was a fresh bandage about his head, but otherwise nothing unusual in his appearance

"Sorry I'm late," he said, "but I got some jolted last night and I needed a bit of attention from the company sawbones"

"Where have you been? What happened to you?" asked Beatty, who was the first to recover from surprise.

"I've been working at a bit of a puzzle that was called to my attention last night when we were making some seventy or eighty odd miles an hour headed for this town."

"A puzzle, Mr. MacCarthy?" asked the vice president. "This is no time for trifling."

"It is not, I agree," said the Scot, grinning under his bandaged crown. "The puzzle on which I was working was how, with our up-to-the-minute electric signal system, a freight could break down in the middle of a crooked block and the light not show red."

"They say it *did* show red," inserted Beatty. "That's the whole difficulty."

"I'll call an eye-witness," said the motive-power chief, stepping to the door.

At the entrance of Griselda Inglerock, with modest mien and downcast eyes, Bland Slade sprang to his feet.

"Griselda!" he cried. "Why—why do they bring you into this?"

"Sit down, son," commanded MacCarthy. "She belongs in it."

With a courtliness that his fellow officials did not know he possessed, he

ushered her to a chair. After another bow he asked her to tell what she had seen the night before.

"My father used to be one of your engineers," she began, glancing about the group, "and Mr. Slade is my—best friend. I was visiting at Half Way and was at the trackside when his train passed. For, even though my father was in the other engine, Mr. Slade's winning the race meant much to us. I've known about the block signals ever since they were put in and realized that Mr. Slade's train could not get past unless the signal-light showed white. It was white when he came thundering along and it was white after he passed. It was white when we started up the track back to Half Way and heard the engine's whistle. Then we found the poor fireman who had jumped. And—well, I was frightened most to death until we learned how he had taken the crossover almost at full speed."

"A prejudiced witness," said the vice-president in an undertone as she was ushered from the room.

"But I'm not," declared MacCarthy, who had overheard the remark. "And, with your kind permission, I'll tell you why that signal showed white instead of red. It was the trick the East Shore bunch had up their sleeves. They switched the wires so that the tower man unconsciously reversed his signals. If he set her for a clear track she showed the danger stop-light, and when he set her red she showed white. There you have it! I caught the guilty party trying to readjust the wires."

"You caught him?" cried Beatty.

"Sure. Where did you think I'd been? When we brought up with a hip-hurrah last night I swung on an East Shore local that was just pulling out. I ferried across to Half Way and examined that signal. Their expert was working on the wires as I came along, but he heard me coming and got away. I readjusted them myself."

"But I don't understand, Mac," said Beatty. "What was their object? Surely you don't charge the East Shore with deliberately trying to wreck the Minute Mile?"

"First off I thought that was their dirty game, but I see it different now. They're not clairvoyants, and they couldn't foresee that the cow extra would break down in that particular block. They knew how hard we'd try for a clear track and gave us the credit of getting what we tried for. They expected that signal would stand at white. Presto! they switch the wires so that white shows red, hoping we'd lose a few minutes finding out that nothing was wrong. Fate and a freight-engine and young Slade's nerve crabbed their game."

"A miracle, not my nerve," protested the engineer.

"It is a miracle that they're not a bunch of murderers," cried Beatty, who was fully convinced.

"Who is responsible for this dastardly outrage?" demanded the vice-president. "They must answer for it."

"And I'll even tell you that," continued MacCarthy, who grinned again, as he eased up the bandage which was evidently hurting him. "I've got another witness."

Even Slade was surprised when Stephen Inglerock entered. His mere presence there was startling enough, but Slade was particularly shocked by his appearance. The veteran was a broken man. His hair had whitened overnight and his eyes could not look up. His voice, when he began to speak, was a succession of sobs.

"MacCarthy has told you the truth," he said, after Beatty had outlined the Scot's version of the signal trouble. "They didn't mean to wreck the train Sore as I was, I wouldn't have stood for that. But last night, when I heard of the stalled freight and how near we came to wrecking you, I—well, I haven't slept, and I'm through. I'll never touch hand to another throttle for the East Shore or any other road."

"You didn't plan it?" demanded Beatty sharply.

"I protested against it when Smiley proposed it."

"Smiley!" Beatty's face beamed with satisfaction. Though they held different posts in their respective services, the two men were old enemies. "What county is Half Way in?" he asked. "It seems to me that we need its district attorney and grand jury."

The vice-president frowned.

"I don't like grand juries," he said

"We won the race, didn't we, and we hold the speed record, thanks to Mr. MacCarthy and Slade here. Suppose we just tell Mr. Smiley that we know what we know and hold it as a check upon his friends of the public service commission."

Beatty smiled as he saw the point.

"You don't want any more of me?" Inglerock spoke in a broken voice.

"You bet we do," returned the quick-witted general manager. "How long were you shy of a pension when you jumped us, Inglerock?"

"Thirteen months."

"Then for the next thirteen months you are detailed to the legal department," was his instant decision. "We'll forget you were with the enemy."

"I don't deserve it," he muttered, as he started for the door. His walk was a shamble.

"You're not forgetting Slade," inserted MacCarthy, as the officials began to exult over the new club they held over the East Shore. "If it hadn't been for Slade your wreck-train would have been working over the Minute Mile."

"Nothing of the sort," protested the engineer. "If it hadn't been for MacCarthy I'd have been down the line wiring for a fireman."

"I've heard about corporations being hard-hearted," MacCarthy cried, "but you're the limit, Beatty. The lad is marked up for a better schedule."

"He's not going to leave us? What schedule?"

"I'll whisper it," said MacCarthy.

But they all heard him say: "He's going to be married. I know, for I asked the girl myself. And if the Ramapoo don't furnish his cottage on the bluff you can get another nurse-maid for your engines."

Even the vice-president was beaming.

"Does the future Mrs. Slade prefer mission or mahogany in her dining-room?" he asked.

"Mahog," MacCarthy answered for him. "There is nothing too good for the house of Slade."

(The end.)

OLD-TIMER TALES.

A Railroad Man's Memories of John Brown, the Great Civil War Martyr.

BY DIXON VAN VALKENBERG.

PATRICK HIGGINS, who for more than forty years watched the bridge of the Baltimore and Ohio Railroad at Harper's Ferry, West Virginia, was on duty when John Brown made his famous raid. Higgins is probably the only man living who knew John Brown and witnessed the martyr's historical attack on the United States arsenal. His recollections of the event are authoritative.

"Yes, I know John Brown very well," he informed the interviewer, "but it will be getting considerably ahead of my story to refer to him as 'John Brown.'

"About the middle of March, 1858, a man giving his name as John Smith—Captain John Smith—came to Harper's Ferry and procured boarding accommodations at Sandy Hook, across the Potomac River from Harper's Ferry. I was at that time employed as watchman on the old wooden bridge at the ferry and boarded also in Sandy Hook, a few doors from Captain Smith.

"Naturally, I saw much of the captain, and he told me he was a prospector who had come to Harper's Ferry in the hope of discovering valuable minerals in the surrounding mountains. He used to carry a pick with him and would fre-

quently take long walks. I remember upon two different occasions that he showed me manganese which he claimed to have obtained and also some silver, which he likewise said he found in the vicinity.

"Of course, we were very much interested in Captain Smith's discovery, and he said he intended to open some mines. Later he rented a farm, about six miles from Harper's Ferry, and stated it was his aim to start his mining venture at once.

"Shortly after taking up his new home here he bought a horse and small wagon, and soon he began to receive, almost daily, boxes from the depot, explaining that it was mining machinery. From the length of those mysterious boxes I have since come to the conclusion that they contained the rifles, revolvers, and ammunition which he afterward made use of in his attack on the arsenal.

"This went on for some time, and the residents suspected nothing. Not long afterward a number of strangers came over the bridge and inquired from me whether a 'John Smith' lived in the neighborhood, and to direct them there. These strangers usually came at intervals of about a week, always alone, and, as I later learned, were the men who comprised Captain Smith's band.

"Historians have repeatedly written that the insurrection was supported by negroes, but this is entirely incorrect, for there were not more than three negroes in the party. Personally, I saw the men who made the attack and, with one or two exceptions, recognized every man.

"Employed with me in watching the old bridge at Harper's Ferry was a man named William Williams, and we relieved each other at six-hour intervals. The railroad then had a time-clock on the bridge, such as in use in the large offices to-day, and we were required to register every 30 minutes.

Struck by Stranger's Bayonet.

"On Sunday night, October 16, 1859, I was to report at midnight. On the night in question I arrived at the bridge exactly at 12.20 o'clock and was surprised to find that Williams was not there and had not registered since 10.30. I immediately started back across the bridge in search of him and was accosted on my way by two armed strangers. This was the first intimation I had of the siege. I was commanded by the men to halt, but not being familiar with military life, I didn't obey.

"After my failure to stop at the second command I was struck in the side by a bayonet and rendered almost unconscious by the blow. Regaining my feet, I asked the reason for their molestation, and told them I was the watchman on the bridge

"'Well,' answered the man that I afterward learned was John Brown's son, Oliver, 'we will watch the bridge to-night. You come with us.'

"As we started back across the bridge I saw several long spears and was almost frantic with fear. I struck young Brown a powerful blow with my fist, knocked him down, and made good my escape. In those days I was a swift runner, and, scared as I was, I lost no time in getting back into the town.

Grazed by Enemy's Bullet.

"Fountain Beckam was the railroad company's agent at that time in Harper's Ferry. He was also mayor of the town. He had had a slave named Hayward Sheppard, whom he had freed some time before and was now employed around the station. Sheppard slept in the building. After making my escape from the bridge, I awoke the negro and told him what had happened.

"I discovered that a bullet had slightly grazed my head, but proceeded to Williams's house to see if he had returned home. Mrs. Williams told me he had not, so not wanting to frighten her, I said I had just come over to see about my lantern.

"The Western Express was due from Cincinnati, so I returned to the station. She was on time that night, I remember well, and reached the Ferry at 1.26. The conductor in charge of her was Jake Phillips, and I cautioned him not to cross the bridge, as it had been besieged, and such action would be extremely dangerous.

"Jake was a large, powerful man a typical railroader of the time — who

did not know the meaning of fear. He took his lantern and started over toward the bridge, asking me to join him. While I admit I was terribly scared, I did not want to be called a coward, so I went with him.

"We were fired at by the abolitionists, though I am convinced they only wanted to frighten us. A man carrying a lantern makes an excellent target for those skilled in the use of firearms, but the raiders commanded us to advance no farther, saying they wanted liberty, and that it was only some negroes fighting for freedom

Conductor Refused to Proceed.

"Conductor Phillips and I returned to the station, and shortly afterward, Hayward Sheppard, the negro, ventured out and was mortally wounded.

"In the mean time, a farmer and his sons, who had been attending a religious meeting, were returning home by the way of the bridge and were taken prisoners. The sons were held and the father was ordered by Captain Smith to tell Phillips to proceed with the train. The message was to the effect that the train would not be molested nor the mail delayed.

"Phillips refused to move his train during the night and it did not proceed until after seven o'clock Monday morning, when Captain Smith himself had come and assured Phillips that no harm would befall the train if it resumed its eastward journey.

Troops on Freight-Train Triumph.

"The abolitionists held the arsenal all day Monday, the 17th of October," continued Mr. Higgins, "and kept the village in a state of terror. On Monday afternoon the negro Sheppard, who had been wounded the previous night, appeared to be dying, and pleaded with me to give him a drink of water. The poor fellow's sufferings were so agonizing that I determined to risk going for the water, starting for the Shenandoah River with a pitcher.

"I was halted, as expected, by a man named Thompson, a son-in-law of Smith, who, on learning my mission, bade me to get the water. He also made a remark which I have pondered many times since. As I returned from the river, he said:

"'It serves him right! If he had listened and taken our advice he would not have been shot.'

"From this, I feel certain, Hayward Sheppard had been approached and asked to join in the uprising, which he probably declined, and had been threatened with death if he told.

"On Tuesday, October 18, a company of United States marines from Washington, under command of Colonel Robert E. Lee, afterward the great Confederate leader, and Major Green, arrived at Sandy Hook by freight-train over the Baltimore and Ohio, and marched to the Ferry, prepared to take possession of the arsenal.

"Major Green advanced toward the fort waving a white handkerchief, went inside, and consulted with the raiders. Returning from the fort, he came to where I was standing alongside of Colonel Lee, and said:

"'Colonel, those raiders in there are commanded by old Osawatomie Brown, of Kansas, and he refuses to surrender.'

Eleven Killed.

"Then it was that the real identity of 'Captain Smith' was learned. The order was given to charge the fort and, after the third attack, Brown and his men were captured.

Eleven of them, including Brown's oldest son, Oliver, were killed in the encounter and were buried along the Shenandoah River.

"Brown and the remainder of his men were taken on the first train to Charlestown, the county seat, and were tried and executed without delay.

"I shall never forget that eventful 2nd of December, 1859, when John Brown was hanged at Charlestown," concluded Mr. Higgins. "His remains were brought here and met by his widow and a man by the name of Tindale, from Philadelphia, who afterward came to the Ferry as a major in the Twenty-Eighth Pennsylvania Infantry. Brown's remains were taken back to his old home in New England to their last resting-place, many miles from the little town he immortalized."

MYSTERY OF "U. P. 907."

The Baffling Disappearance of a Car Containing Over Fifty Thousand Dollars' Worth of Silk.

A COWBOY who was riding through the Red Desert of Wyoming in search of strayed cattle some years ago, came suddenly upon a freight car. It lay on its side at the bottom of a gulch. The Union Pacific tracks were some distance away, at the top of a steep fill. He wondered how a freight-car had fallen into a gulch miles from a station. It appeared to have been there for some time. The sand was banked up around it a little, but it appeared to be undamaged.

He climbed up on the car and tried to peek at its contents, but he could see nothing. He noted the number, 907, and resumed his search for stray steers.

The freight-car remained in his thoughts throughout the day. He camped that night in the desert and fell asleep wondering how U. P. 907 had been lost. He did not learn until later that its mysterious disappearance had driven a score of "car snatchers" almost crazy for a year or more.

The next day the cowboy went to the nearest telegraph-station. The lone operator greeted him warmly. They never had met before, but in the big open spaces of the earth where humankind are scarce, a chance to talk is not to be passed lightly.

After the usual salutations and the rolling and smoking of two cigarettes the cowboy mentioned casually that he had seen a red freight car, branded "U. P. 907," astray in the desert the day before. The operator eagerly asked him "Where?" and the cowboy waved his hand in the direction of Laramie, which lay more than a hundred miles beyond the horizon.

Cowboy Tells of Strange Car.

"If you had a hoss and I had time, I'd take you over and show it to you some day," added the cow-puncher. "It's only about twenty miles from here."

"It's number was 907, you said?" asked the operator, hastening to his key.

The cowboy nodded.

For the next few minutes neither spoke, but the telegraph in the little office chattered nervously. Then the operator turned to him and said:

"A car-inspector is coming on No. 5 and I wish you'd wait. I'll rustle a horse for him, and if you'll show him that car I reckon the road will pay you for your trouble. Do you know what's in it?" he demanded suddenly.

"No. Couldn't make out, and I didn't want to break it open. Didn't have anything bigger'n my knife with me, anyhow."

"Well, neighbor," replied the operator; "that's a car of silk that's worth anywhere from $50,000 to $100,000. If it ain't damaged it'll be a load off the minds of a lot of the big officials of the U. P. How it got away has been a great mystery."

In due time the wrecking-crew arrived and hauled 907 onto the rails again. Its contents was not damaged in the least. Then, bit by bit, the disappearance of the car from the center of a train was explained.

Disappeared on Mountain Grade.

No. 907 had been the eighth car from the front of a sixteen-car silk special that had been loaded at San Francisco and was bound to New York. At Green River, Wyoming, the train halted for a few minutes to change engines. The numbers of the cars were checked, the seals were examined, and all usual precautions observed.

Then came the long run through the Bitter Creek country across the Red Desert and over the mountains to Laramie. At Laramie there had been another inspection. Consternation filled the train crew when it was found that instead of sixteen cars in the train there were only fifteen. They scratched their heads and wondered, but to no purpose. After losing half an hour trying to solve the mystery, the train resumed its journey eastward.

With the finding of the car the original train crew were rounded up and questioned by the division superintendent. Then came the explanation, which proved to be very simple after all. In the run up and down the mountains the train had broken in two. That was nothing very extraordinary. The hands on the detached cars tended the brakes, and, after rounding many curves at high speed the train had been stopped and coupled up again. The rear car of the forward section — No. 907 — had jumped the track and gone down the embankment. When the train had been recoupled in the darkness no one had noticed the loss.

TO THE READERS OF THE RAILROAD MAN'S MAGAZINE

BEGINNING next month, we shall add an important new feature to the RAILROAD MAN'S MAGAZINE which should make it a decidedly stronger and more valuable publication.

The new feature is of a character that very well fits a magazine for the railroad world All railroad men have to do with mechanics, and this new feature pertains to mechanics. Because of this change and this new feature, we are changing in part the name of the magazine, so that it will cover the new feature as well as its old field.

Beginning next month, with the July issue, the RAILROAD MAN'S MAGAZINE will be called THE RAILROAD AND CURRENT MECHANICS. This new department will be very fully illustrated and will furnish most valuable information, as well as entertainment, to railroad men everywhere, men who have to do with mechanics.

A knowledge of new inventions, new applications of old inventions, and the wonderful developments in the mechanical world, is necessary to every man

who wishes to keep up to date and to make the most of himself.

Fiction is all well enough as a pastime, as an amusement, as entertainment, and it is necessary to our pleasure and enjoyment. But we need something more than entertainment. We need, in addition, to know the things that will better equip us for a more useful and prosperous life A knowledge of mechanics, new inventions and popular science will better equip us for usefulness for money earning and will better equip us in the general fund of knowledge

But the fiction side of this magazine is not going to be neglected. It is going to be improved. In the place of the serial story we shall give you a novel—a complete novel in each issue. To my mind, this is a very great improvement. To my mind, the American public has grown tired of reading serial stories in monthly instalments. It means too long to wait to get the continuation of a novel, and it means six or eight months to finish a novel.

We have one serial story running that will continue for two or three months to come; but, as soon as that is out, I think we shall do away entirely with the serial story in this magazine, publishing in its place a complete long story every month, and a generous supply of short stories.

The departments and special railroad features that have proved so popular in this magazine will be

continued as heretofore The new feature, current mechanics, will not displace them or in any way interfere with them.

When you get your first issue of this magazine with the new department, the July issue, we should very much appreciate a line from you, many of you or all of you, telling us how you like the changes, and offering suggestions. This question of offering suggestions, by the way, is a very important one. If you would take the trouble to write us oftener, and tell us what you want in a publication—tell us the things that interest you most, tell us the things that interest your friends most—we should then better know just what you do want, and just what kind of magazine to give you

Keep in mind the fact that we are not publishing this magazine for ourselves. We are publishing it for you, and without knowing, and knowing to a certainty, just what you want, it is all the while a question of guessing as to what you do want. It would be so much better if you would tell us what you want.

This does not mean that we should give every individual reader what he wants, but that we should be guided by the wishes of the majority Moreover, with thousands of men thinking out all the while a scheme for bettering the magazine, and then writing us of their conclusions, these men would in a measure

THE RAILROAD & CURRENT MECHANICS

be assistant editors. And the best possible assistance to the editorial force is that assistance that comes from the readers themselves.

I am telling you about these changes, and am having this little talk on generalities with you chiefly for two reasons. First, so that you will know in advance of the changes that are to be made in this magazine and will understand my reason for making them. Second, so that you will recognize this magazine when you see it on the newsstand with its changed name. To make this still more clear, I am printing on this sheet the new heading as it will appear next month on the cover of the magazine

Yours very truly

Frank A. Munsey

Facts and Photos from the Mixed Extra

A Way-Bill of Information, Stories and Pictures Culled by the "Railroad Man's Magazine" from All Parts of the World.

THE most powerful automobile in the world has been placed in service by the Pennsylvania Railroad to supplant horses formerly used to switch and haul cars over railroad tracks in Altoona, Pennsylvania, and make deliveries to local industries. Some of the most remarkable features of this tractor are that it drives, steers, and brakes on all four wheels. The development of these features was made necessary on account of the short radius curves around which the tractor would be required to operate and the necessity of driving all four wheels in order to secure the necessary tractive-effort.

The wheels and driving mechanisms are located near the ends of the chassis and the battery-box is hung in the center directly under the cab. The cab contains the air-compressor, controlling apparatus, and steering-wheel. Sloping hoods at each end of the cab cover the driving mechanism.

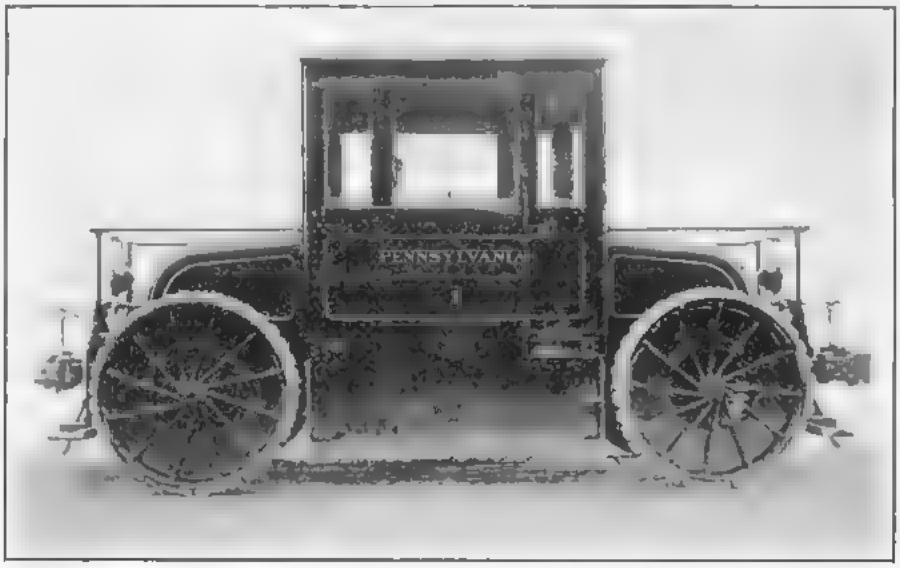
The driving mechanism at each end is supported by the axle, which is the largest automobile axle ever built, and is held in position by radius rods. The motive-power is furnished by two motors of approximately twenty horsepower each. Each motor is geared through a set of gears to a countershaft. The use of herringbone gears necessitates a special flexible coupling between the armature shaft and the herringbone pinion. Herringbone gears were selected because of their strength and running qualities.

Integral with the countershaft gear is a differential gear of special design, which is the largest differential gear ever built for an automobile, and is a departure in differential construction. Each side of the differential drives a section of the split countershaft. Each section of the countershaft carries a universal pinion, which meshes with the driving-gear that is bolted to the wheel casting. All rotating parts of the driving mechanism are carried on ball bearings.

The wheels, which are of the tangent-spoke type, are steel castings, weighing approximately 1,200 pounds, and are equipped with steel-base, solid-rubber block tires of such design that one section may be removed and replaced without disturbing any other section.

Each wheel is carried on a steering-knuckle, which is operated by a steering arm engaged with an arm on a longitudinal shaft, carried by the chassis. The longitudinal shaft is made in two sections, coupled at the center by means of an interrupter crank. From this coupling there are two connectors, which are attached to a system of planetary gearing driven by a large steering-wheel in

Series began in the March Railroad Man's Magazine. Back numbers for sale at this office.



THE MOST POWERFUL AUTOMOBILE IN THE WORLD. THE PENNSYLVANIA RAILROAD'S MOTOR FOR SWITCHING CARS IN THE YARDS AT ALTOONA, PENNSYLVANIA. IT HAS A DRAW-BAR PULL OF 21,500 POUNDS

the center of the cab. This steering-wheel is of the marine type and turns the tractor in the direction the top of the wheel is turned.

The steering arrangement allows the tractor to turn in a circle of twenty-feet radius—the trailing wheels tracking with the forward wheels. This tracking feature allows the operator to devote his entire attention to the forward end of the tractor, since the trailing end will always clear anything that the front end has cleared

On each side of the cab, at the center, there is a lever connected to the controller, which allows the operator to drive from either side of the steering-wheel. The lever is moved in the direction in which the tractor is to go, and a guard prevents the operator from going into reverse without first coming to a full stop.

On each side of the cab, within easy reach of the operator, there is also a motorman's brake-valve that controls the operation of the air-brake. The air-brake apparatus is of the automatic type, air being supplied to the main reservoir by a motor-driven air compressor

The normal draw-bar pull of the tractor is 8,000 pounds. During one of the trials in the Juniata shop yard it pulled a locomotive and two cars with such surprising ease that it was decided to have the tractor and the locomotive push against each other to see what the tractor could do. With the throttle wide open, the locomotive failed to hold the tractor and was moved several feet. The locomotive used was a Class "R," and is rated at 21,500 pounds draw-bar pull.

The dimensions of the world's largest automobile are as follows:

Length over couplers....	23 feet
Length over chassis....	10½ feet
Wheel-base	12½ feet
Diameter of wheels over tires	5 feet
Tread of wheels.....	7 feet
Width of tires.....	12 inches
Width over all.....	8 ft 4 in
Height over all.....	11 ft 3 in
Size of cab	7 ft. by 7 ft 6 in. by 7 ft high
Weight ...	28,850 pounds
Draw-bar pull (normal)	8,000 pounds
Draw-bar pull (maximum)	21,500 pounds
Speed (normal light)	6 miles an hour
Weight of battery	4,350 pounds

ONE of the best examples of nerve, initiation, and cooperative effort to combine business and education is exemplified in the yellow car that has been

touring the West equipped to show what electricity can do on the farm and in the home. For five hundred miles of the Northern Electric Railway system it traveled, and six thousand people saw what it had to show.

This yellow car may look a trifle frivolous at first glance, but it is a serious affair. Fifteen hundred feet of wire and conduit are concealed within it, and those fifteen hundred feet are there to show what can be done in irrigation, refrigerating, cream separating, and in countless kitchen labors

Portable steps with hand-rails are arranged at each end of the car, so that the visitors at every stopping-point may pass in and out to see the booths. These steps are placed inside while *en route*

Inside the car is decorated like an up-to-date living-room. The walls are covered with a dark-brown burlap, the joining edges covered with small battens, which foot on a base-board, all stained

THE "ELECTRIC COOK" IN THE DEMONSTRATION CAR OF THE NORTHERN ELECTRIC RAILWAY. THIS CAR HAS TRAVELED EXTENSIVELY OVER THE NORTHWEST. IT CARRIES A CORPS OF INSTRUCTORS WHO EDUCATE FARMERS IN THE BETTER CARE OF THEIR LAND AND CROPS, AND FARMERS' WIVES IN DOMESTIC ECONOMY

to match. This decoration gives the attractive effect of mission finish and at the same time conceals the wire and conduit utilized in running electric circuits and connections to operate the several devices.

The booths are lighted by a row of 25-watt incandescent lamps with holophane shades running overhead the entire length of the car, and by a bank of lights fronting each booth. Almost half of the entire space of the car is devoted to irrigation and the use of electric power in pumping.

The farmers discovered in one booth a miniature orchard set out with rows of trees small enough to take home to the kids to play with, and complete enough as examples in fruit-raising. The pocket edition orchard is laid out with furrows running lengthwise through several rows of trees, the furrows being fed from a main ditch in which gates are inserted to control the water in feeding the furrows

A model deep-well pump forces the water for irrigating the orchard. Water is carried in a concealed tank underneath the table on which this exhibit is arranged, and after being pumped to the ditch and flowing through the orchard, is collected again in a blind ditch and conducted back to the original supply tank.

The alfalfa field is another bit of toy farming designed to show what electricity can do for the farmer. This field is laid out in a long shallow galvanized iron pan on a long table. The pan is filled with a moistened mixture of fine sand and cement. The mixture is reenforced with a small mesh wire so that the cement may be laid as thin as possible to diminish the weight and still not be too fragile.

The furrows and checks are then molded in the concrete so as to give sufficient flow to the water. A small centrifugal pump forces water through the alfalfa field.

The finishing touches are given by painting the surface of the orchard brown to represent soil, and the alfalfa field green. This paint incidentally renders the cement surface impervious to the water flowing over it. A small rail-fence divides the two fields, and there is a model pump-house and a miniature transmission line to complete the representation.

In one corner of the alfalfa field is a small motor and belt-driven centrifugal pump which supplies an elevated tank with water to show the operation of the float switch and illustrate the automatic control of pumping water as applied to house service. The front of the tank is of plate glass that the action of the float may be plainly visible.

A small ice and refrigerating machine is displayed in the next booth. It has but one-sixth of a ton refrigerating capacity and is designed for the farm or dairy as well as for many other private uses. The machine itself is simple, reliable and inexpensive, requiring but a ½ horse-power motor to operate the pump. A twenty-five-pound cake of ice is frozen in from ten to twelve hours. At the same time the ammonia coils in the refrigerator box hold the atmosphere at the required temperature for refrigeration.

One of the most interesting devices is the electric "cook." A few weeks' cooking for a harvest-crew won't bring the housekeeper to nervous prostration if her kitchen motor has been sharpening her knives, ironing her clothes after washing them, running her vacuum cleaner, and fanning her all the time into a good temper.

The yellow car displays a complete electrically equipped kitchen with cooking range, teakettle, and the small motor for polishing silver and grinding knives.

In the next booth is a dainty dining-room display. The chafing dish chafes, the percolator percolates, the toaster toasts, and the samovar sams all by electricity. An electric cigar-lighter rests upon a mantel. The dining-room is heated by a tubular air-heater.

Another booth shows a bedroom equipped with an electric hair-dryer, massage vibrator, curling-iron heater, heating pad, and nursing-bottle warmer.

The power behind the throne is a main switchboard at one end of the car to control the different circuits. When town service is available, the current is brought in from the outside and tapped onto this board. When this is impossible, a small generator-set is installed in one end of the car as an auxiliary. The direct current is then taken from the

trolley-wire and transformed to 110 volts single phase.

"TALK about the pirates who used to sail the Spanish Main — they weren't any tougher citizens than some of the foreigners in the railroad construction gangs. And the boss of the gang has to be able to thrash any man under him."

The speaker was a civil engineer who had built railways from the Andes to Alaska.

"I ran across one of these construction-camp foremen last summer who was absolutely different from any other that I have known," he continued. "He was a sickly little fellow who weighed about 90 pounds, but he ruled his men like a despot. There wasn't one of them that couldn't have wrung his neck like a chicken, but there wasn't one of them who wouldn't jump like a scared rabbit when the little boss wheezed out an order between his coughing fits. How did he do it? Strategy.

"I was up in the north woods on my vacation. One night we pitched our camp on the edge of a lake. No one was with me but my guide. The guide said something about there being a construction-camp about a mile down the lake, but I didn't pay any attention to it. I was after fish.

"The next morning being Sunday, I got up late. We had a leisurely breakfast and then went down to the shore of the lake where we had left our boat. It wasn't there. It was out in the middle of the lake, and three men from the construction-camp were rowing about in it, having a great lark. We yelled at them to bring back our boat, and they yelled back that they would do so when they were good and ready.

ROUNDHOUSE OF THE NEW YORK CENTRAL LINES AT THE FOOT OF WEST SEVENTY SECOND STREET, NEW YORK CITY. THIS BUSY RAILROAD SECTION IS A STONE'S THROW FROM RIVERSIDE DRIVE, THE MOST FASHIONABLE RESIDENTIAL SECTION OF THE METROPOLIS.

Photograph by Edwin Levick, New York

"There was nothing to do but wait. In the course of two or three hours we saw them make for a point down the shore. By the time we reached this point they had beached the boat and made off. We shouted after them, but they paid no attention.

"I was fighting mad. The guide and I started for the construction-camp. When we got there I asked for the foreman, and a little middle-aged man who seemed to be in the last stages of consumption was pointed out to me. I introduced myself and told him my troubles.

"Then he told me his troubles. It seemed that he couldn't get enough good whisky. I invited him up to my camp to talk things over.

"He told me that I had done right in coming direct to him with my complaint about his men. He said I wouldn't be bothered again that way. He remarked that if I had tried to argue with the men who had taken the boat, probably they would have beaten up both myself and the guide

"Now, I'm a pretty good rough-and-tumble fighter and my guide was in the heavyweight class, too. I sputtered a little and let fly that I didn't understand how such a little shrimp as he was could have any control over several hundred big ruffians.

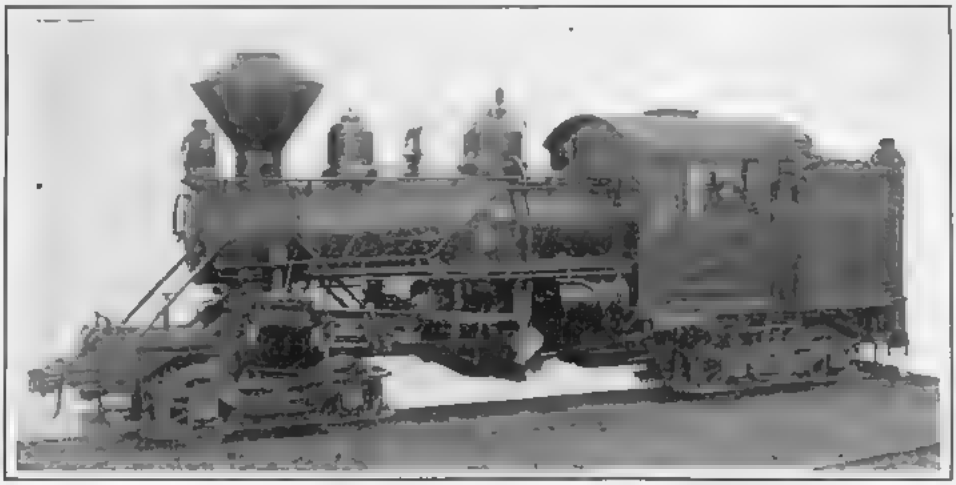
"He grinned and remarked that he ruled them by the power of his intellect not by his fists. We let it go at that, and after dinner we rowed down the lake back to the camp.

"When we got there he asked me to point out the men who had stolen my boat. I did so, and he called them on the carpet. They acted as if they were afraid of him

"I had noticed a remarkably well-built man, known as 'Frenchy,' lounging in the background. As the pirates slunk off the boss beckoned Frenchy to come over. The boss remarked that Frenchy was down on the pay-roll as a cook, but that he didn't know anything about cooking. I inquired what his specialty was.

"'Foightin',' remarked the boss sententiously.

EUGENE LANGUENESSE STANDING IN THE SPOT ON WHICH HE STRUCK AFTER A FALL OF 170 FEET IN THE WRECK OF THE QUEBEC BRIDGE. A BROKEN COLLAR-BONE WAS HIS ONLY INJURY



THE FIRST GEARED BALDWIN LOCOMOTIVE. THIS TYPE OF LOCOMOTIVE IS SPECIALLY SUITABLE FOR SLOW-SPEED SERVICE ON STEEP GRADES, SHARP CURVES AND UNEVEN TRACKS. THE POWER DEVELOPED IN THE CYLINDERS IS TRANSMITTED THROUGH SUITABLE GEARING TO THE WHEELS, ALL OF WHICH ACT AS DRIVING-WHEELS. THE MAIN DRIVING SHAFT IS BEVEL GEARED TO TWO LONGITUDINAL SHAFTS, ONE OF WHICH EXTENDS TO THE FRONT AND THE OTHER TO THE REAR TRUCK.

"Then the secret of the boss's dominance came out. He knew the railroad construction game from A to Z. He had been a good lightweight fighter before John Barleycorn sent him to the mat.

"So when he started on this job he picked up Frenchy in Quebec. Frenchy was a sort of local champion in that part of Canada. The boss employed him as a bodyguard and to do his fighting for him. If any of the gang got obstreperous Frenchy would polish him off in no time. The result was that every man in the camp feared the boss.

"'How do you manage to knock out all these big rough-and-tumble scrappers?' I asked Frenchy.

"'Pugilistic science,' he replied. 'Not one of them knows anything about boxing. I can hold them off until I get a chance to plant just the right blow. A good, stiff punch planted on exactly the right spot will take the fight out of the biggest, strongest man that ever lived. He'll remember it as long as he lives. I got it once, and I know.'"

THERE have been more telegraph operators who have become successful actors than those who have won fame as playwrights. In fact, the number of telegraphers whose names are familiar as dramatists is very limited.

Some years ago a young railroad telegrapher had an idea that he could write plays. He worked as an operator on the Union Pacific, the Southern Pacific, the Santa Fe, and other Western roads.

Sometimes he was a train despatcher, sometimes agent and operator at some small station, but always he was busy writing for the stage. He did not get any encouragement from producers, but that did not damper his enthusiasm.

He also thought well of himself as an actor. In Salt Lake City, for instance, he had a day operator's job and appeared in minor parts in a stock company at night.

He married an actress, and they were devoted to each other. Telegraphy was a certain source of income, acting and playwriting were uncertain, so this young man stuck to the key.

Twenty-five years ago, he and his wife came to New York City. He found employment with the Western Union. He never tired telling about the plays he was writing and the hopes that he had built that some of them would some day make his fortune.

One of his friends gave up telegraphy to become a newspaper reporter. In him the aspiring operator and play-writer

thought he discovered a kindred spirit He congratulated him on becoming a "literary man" and handed him one of his plays to read.

The reporter put the play in his pocket. In time he read the first few pages of the manuscript. It didn't interest him and he stuck it in his pocket again.

The manager was in a quandary. He knew that he would have to take off the play at the end of the second week. He had no idea what he could put on in its place Just then he chanced to meet an advance agent to whom he told his predicament

"I was in Trenton last night," remarked the advance man, "and I saw

INTERURBAN RAILROADING IN INDIA HAS NOT REACHED A STATE OF PERFECT DEVELOPMENT, AS THIS PHOTOGRAPH WILL SHOW THIS IS ONE OF THE COMMUTERS TRAINS RUNNING OUT OF BOMBAY THE LOCOMOTIVE IS CAPABLE OF MAKING FIFTEEN MILES AN HOUR, WHICH IS GREATER SPEED THAN THE FLIMSY CARS WILL STAND WITHOUT BEING SHAKEN TO PIECES

Photograph by Brown Brothers New York

The next time he met the dramatist at a little *table d'hôte* where they dined the reporter told him that he would do better to stick to telegraphy, and that his play was worse than his Morse.

Some years later a theatrical manager put on a big production at the old Bijou Theater, on Broadway. He was so certain of its success that he spent $50,000 before the curtain went up. He leased the theater for the entire season. He felt sure that his show would be the hit of hits

It was a frost.

a show there that might do you until you get something else. The cast isn't anything much, but they managed to please the audience. Better take a run down there and have a look at it."

The theatrical manager did so, hunted up the author and closed a contract with him that night. The author was so dazed at his chance of getting his piece on Broadway that he was ready to sign almost any sort of agreement. He was the telegraph operator. He had saved up his money and had put the show on the road himself

The piece was "My Friend From India." The author-telegrapher was Harry du Souchet. The play ran three years. It made the fame and fortune of most of the persons connected with it—even the members of the road company, who were in the original cast. It made Mr. du Souchet famous and his royalties were the foundation of his fortune.

"My Friend From India" was the play that the newspaperman had found so uninteresting in manuscript.

"NOTHING that an operator encounters in the course of his business has such a demoralizing effect on him as horse-racing," said an old-time telegrapher when he read that racing might be resumed at the big tracks around New York City.

"More operators have gone wrong, have been ruined in purse and in character by racing than by all the other vices combined," he continued. "To the outsider the reason for this may not be clear, but let me tell you: I speak from my own experience. I have worked at race-tracks, in pool-rooms, and in the biggest telegraph offices in the country.

"Operators handle so many messages—private advices from owners, trainers, touts and others—concerning horses and betting that the hope of making easy money is very bright. A large number of racing men send their messages in cipher code. Most of these codes are crude. It is not long before the telegraphers study out the combinations and meanings of the various ciphers.

"There is something about a code despatch from a race-track that makes it more impressive than one sent in plain language. The average racing operator will put the crown jewels on a bit of information that comes in cipher when he might pay little attention to a telegraphic tip that any one could read.

"As a matter of fact, however, there is very little profit to be gained from either a code message or an open one. Nowadays, there is a lot of racing stuff coming from Juarez, Charleston, Havre de Grace, and other places where racing is going on, but my experience is that so far as tips are concerned the person who goes to a race-track and simply bets on the favorite or the second choice has as good a chance of winning as the telegrapher who has dug up any amount of 'inside' information.

"Too much of this 'feed-box info' has worked great harm.

"The only man I remember who ever got ahead of the game was Dick Kane. He was a Western Union operator in New York in the old days. He was one of the hardest-working telegraphers I ever knew. For years he labored sixteen and eighteen hours a day

"I remember one occasion when he had a job in the New York Produce Exchange, handling a quotation wire from 10 A.M. to 3.30 P.M. He rested for an hour and a half and then went to work in the Western Union, from 5 to 9 P.M. As soon as he had finished his trick there he hurried over to the old Times Building on Park Row and handled special press despatches until two or three o'clock in the morning.

"For years Kane was one of the unluckiest of mortals. Regularly every pay-day he would take the afternoon off and go down to the track with his roll. He would come back practically cleaned out. He would bet the limit on anything.

"His luck changed, however, and he made some winnings. He quit work as telegrapher and within a year became one of the biggest plungers on the American turf. It was a common thing for him to 'put down' $5,000 on a single horse.

"His success did not change him. He was the same big, open-hearted, kindly, generous fellow in prosperity that he was in poverty. His success at the track continued for a year or two. Like most other big racing men he loved to buck faro bank and play poker at night. Even at these games his luck stayed with him, and his bank roll grew larger each month.

"But he grew weary of racing and cards. He wanted to tackle still bigger games. One winter, after a very prosperous season, he decided that there was no reason why he couldn't pull the tail feathers out of Wall Street. It looked easier than playing the ponies.

"Do you remember a panic along about 1898, when the bottom fell out of things almost overnight? That was when Dick Kane got his. He lost every cent.

PULLING SEVENTY LOADED BOX CARS OVER BAILEY HILL ON THE SISKIYOU MOUNTAIN GRADE OF THE SOUTHERN PACIFIC RAILROAD, NEAR DUNSMUIR, CALIFORNIA. THERE ARE EIGHT LOCOMOTIVES—THREE IN FRONT, THREE IN THE MIDDLE AND TWO AT THE RIND END WHICH ARE NOT VISIBLE IN THE PHOTOGRAPH

Photograph by J. Greene, Dunsmuir, Cal.

"Working eighteen hours a day had not sapped his vitality so much as the terrific strain that he had endured at the race-track and in Wall Street in trying to fulfil his ambition to heap up a tremendous fortune in a short time. He died shortly afterward—broke

"Every one who knew Dick Kane sincerely mourned his passing."

HENRY BIERNBAUM, one of the last of the pony express riders, whose prowess shines in the annals of pioneer days, died recently at his home in Philadelphia

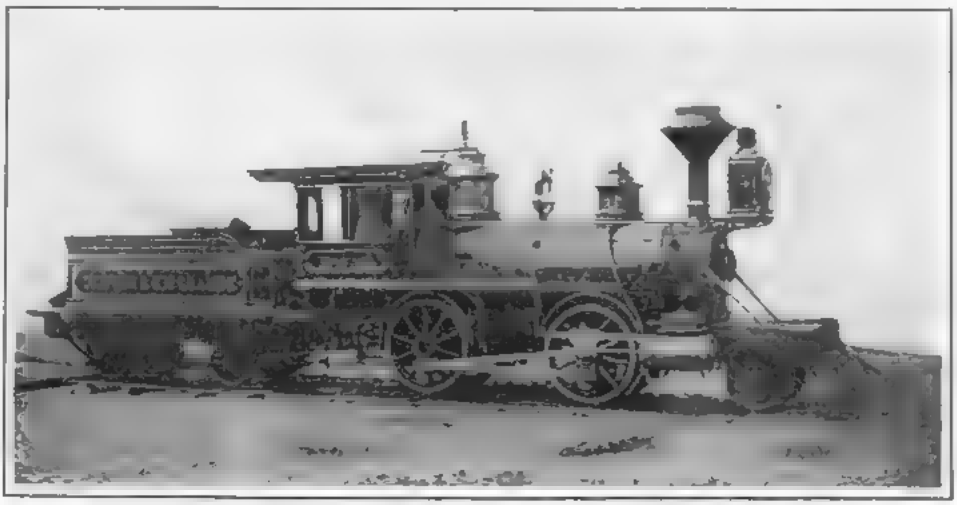
Mr. Biernbaum was born in Seelon, Germany, May 22, 1821. In 1845, just before the gold fever struck the country, he came to America and pushed to the frontier. He carried government supplies, as well as general freight, across the plains and the Rockies before embarking in the more exacting task of relaying messages wrapped in "oil-skin" from the Missouri River to the Pacific Ocean, every one of which cost five dollars for transmission.

The express rider, as part of a circus program, is good entertainment, but conveys only a faint idea of the band of splendid fellows, eighty strong, who, when the country was young, rushed the mails across the continent from St. Jo or Kansas City to San Francisco, 1,966 miles, in nine days.

Before this the quickest time ever made was by the Butterfield stage in twenty-one days. The eastern part of the run was by rail, the alert messenger snatching the pouch from the incoming ferry on the far side of the Missouri. When the pony express got under way it more than cut the old schedule in half.

Never did its riders fail to span the great American desert, the snow-topped ranges and the valleys of the Pacific slope in the advertised ten days, and when the fleet riders carried Lincoln's inaugural address to the coast in seven days and seventeen hours they broke the world's record for despatch by men and horses

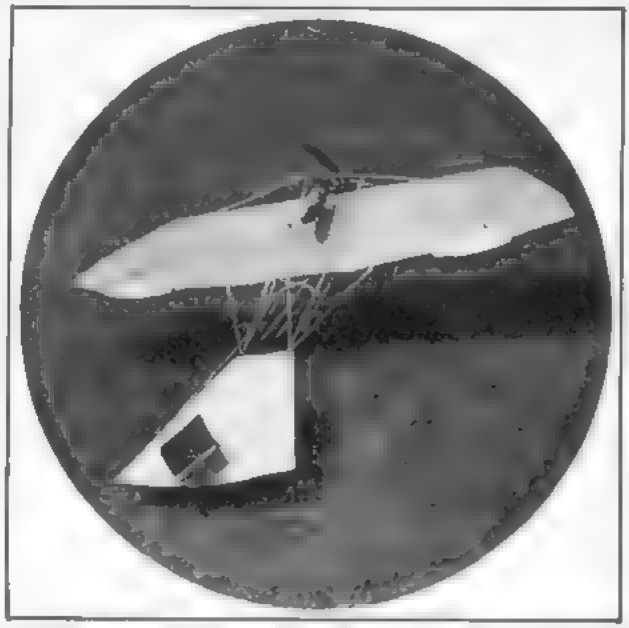
Each man covered from eighty to one hundred and ten miles a run. Ten miles an hour was the lowest limit. Often in cases of need the speed was twenty-five miles. Changes of horses were made every twenty-five miles, and two hundred and fifty miles a day had to be measured off in order to get the oil-skin packages through in guaranteed time.



THE "MONTEZUMA," THE FIRST LOCOMOTIVE USED ON THE DENVER AND RIO GRANDE RAILROAD THIS LOCOMOTIVE WAS BUILT BY THE BALDWIN LOCOMOTIVE WORKS AND WAS PUT IN SERVICE JULY 3, 1871 THE DIMENSIONS ARE AS FOLLOWS GAUGE, 3 FEET; CYLINDERS, 9X16 INCHES, DIAMETER OF DRIVERS, 40 INCHES, WEIGHT ON DRIVERS, 20,000 POUNDS; WEIGHT ON TRUCK, 5,000 POUNDS, TOTAL WEIGHT, 25,000 POUNDS

Courtesy of the Locomotive Firemen and Engineemen's Magazine

SEAT OF THIS MONOPLANE WILL NOT TIP.



THE HORIZONTAL TAIL WING IS CONNECTED WITH THE AVIATOR'S SEAT BY RODS AND ARMS A MECHANISM WHICH KEEPS THE AVIATOR'S SEAT ALWAYS ON A LEVEL

BY the addition of a horizontal tail-wing an aeroplane has been constructed in which the aviator's seat remains always at a level. The seat works on the principle of a pendulum, and is connected to the wing at the rear by rods which are controlled by levers. If the machine dips downward or upward, the weight of the man, acting in conjunction with the wing, immediately moves the seat to a horizontal position, thus enabling the aviator to control his mechanism with greater ease than would otherwise be possible The mechanism operating the [illegible]ship is protected by an armor-steel hood

THE OSCILLATING SEAT ACTUATED BY THE TAIL WING NOTE THE ARMOR STEEL HOOD TO PROTECT THE MECHANISM OF THE MONOPLANE IF IT SHOULD BE USED IN WAR

Photograph by Underwood & Underwood, New York

THE RAILROAD BOOSTER.

BY F. B. LOVETT,

Author of "The Railroad Grouch," "Boomers of the Key," etc.

He Is the Cheerful Man with the Beaming Phiz. He Is None Too Numerous in This World; but Wherever You Find Him, Business Is Good. You Can't Develop the Smile That Won't Come Off; It Must Grow on Naturally.

F. B. LOVETT

BY the "booster" I do not mean to include the man who is selling town lots on a city site three feet beneath the low-water mark and seventy-five miles from the railroad. Neither do I mean to embrace the promoter of mining golcondas which are "salted" to a golden hue on top and full of unadulterated mud at the bottom. These men, it is true, are sometimes termed "boosters," but they are very different from the Simon pure, eighteen-carat article that I have in mind.

They have an ulterior object in their efforts, and there is as much difference between them and the genuine booster as there is between a clearing-house certificate and real money.

The Sunny Jims of life are none too numerous. They do their noble work unconsciously. They radiate good cheer as the knocker radiates gloom—by their presence.

One man will rush up to you, grab your hand, almost crush your fingers, and then hang onto the crippled member for five minutes while he pumps hot air out of his system. How do you feel when he lets go?

Like lambasting him good and cheerfully, paying a fine for so doing. Still that fellow thinks he's the king-pin of joy distributers, and beats it with inflated chest, satisfied that he has cheered you up for one day at least, when in reality he'd ought to be pinched for assault and battery.

Then along comes the cheerful man with the beaming phiz. He greets you with a smile of easy and natural proportions, gives your mitt a friendly grasp, and says, "Hello, old chap. How are you?"

That's all; but the genuine label is on his smiling face. In his handclasp there's a certain note of real interest, and his query rings true.

The Smile That Chills.

When he goes your feeling of hostility toward the other man has been appeased, and you set about your work with cheerful ardor. If any one asked you what effected your change of heart you might not be able to tell him, and he of the beaming phiz passes on his way unconscious of the oil he has poured on troubled waters.

I have always noticed that the man who boasts of his ability to dispel gloom and indicates by his conduct that he expects everybody to produce the smile that won't come off the moment he appears is usually the one who calls forth the most heartfelt gulps of relief when he takes his uproarious departure.

He is in the same class with the "life

of the party" at a country social, or the old lady who dons her most somber black and most mournful expression and goes visiting a sick friend in order to cheer up that unfortunate invalid.

When she arrives she insists on waking up the patient and proceeds to tell her gruesome tales of all the people that she ever knew who shuffled off this mortal coil with about the same kind of a sickness with which her helpless victim is afflicted.

She enumerates the different funerals she has attended, and by the time she is forcibly pulled away the erstwhile convalescent is about ready for the undertaker.

Then she seeks her home and takes credit for an act of charity which, she is sure, has not been passed unnoticed by the recording angel.

The Real Gloom Killer.

The steady and increasing demand for the genuine booster has produced a large circulation of counterfeits, for human nature abounds in dross and the baser metals which, to the uninitiated, closely resembles gold ore.

When you're down and out and the whole world has assumed a somber and forbidding front, no matter what kind of an approach you make, the friend who comes along with another tale of wo as long as your own and tries to sympathize with you on the strength of it, is not a booster.

He may think he is, and so may you, but he is only one of the counterfeits.

The real booster comes along, listens with genuine interest to your story of hard luck which you embellish until it sounds like the swan song of an Indian brave departing for the happy hunting-grounds, but when you have finished he doesn't retaliate with one a little bit worse

"Well, that's not so bad," he says, with cheerful assurance. "Nothing to worry about at all. Let's see what we can do to straighten matters out right away"

The fact that any one on earth can see a ray of hope in your predicament startles you out of your gloom instanter, and the crisis has been safely passed. You have been sniveling about hard luck. Such friends in whom you have confided the sad story sniveled with you until it never occurred to you that there was any way out at all

A surge of self-confidence comes over you, but you don't know where it comes from, nor does the booster know that he has imparted it to you. It's simply his natural way of exuding the elixir of life.

Must Be Labeled "Genuine."

The next time the curtain goes up you are lined up in front of the superintendent, not begging forbearance and pleading your unfortunate circumstances, but demanding your job back and a chance to make good.

Or, perhaps, you are standing boldly in front of one of your many creditors, threatening to thrash him if he don't give you a fair opportunity to pay up.

You'd never have accomplished either without the moral support of the booster. No, sir; you'd have crept in to see your impatient creditor on your hands and knees, whined a few times, and then been thrown out. Or, if you'd met the superintendent in the yards, you'd have ducked down a side-track to get out of his way.

The booster is the man who sees the silvery lining in every dark cloud. Not only does he see it, but he takes pleasure in pointing it out to his fellow man.

It is sometimes a hard matter to convince a despairing brother that the silver lining exists and, unless you have the genuine label on your goods, it can't be done, because counterfeit boosting, though offered with the best intentions in the world, has done more harm than the circulation of counterfeit money.

Job Way-Billed as a Roast.

Of course, there are many different ways of boosting.

As soon as I got a place at Stonyhurst another new man came along to take the third trick, which is loaded down with clerical work.

He developed a grouch the first night and maintained it until he got fired. A dozen others followed him and carried out the same program.

The job was way-billed as a roast all

over the pike. Each departing incumbent advised his successor that he was up against it and prepared him for the worst

The town was called a huge joke as a place to live in, but eminently suitable if one was searching for a quiet spot in which to die.

The hotel was recommended as the chief headquarters of starvation and hard beds.

By the time the newcomer had digested all the roasts he was figuring just how many days he'd have to stay before he could safely bunch the job with a ten-spot to the good.

The job is all right—but nobody would believe it. Then along comes Jack Hargreaves, one of the good-cheer battalion. He greets his host of duties with a pleasant smile. He announces that he finds that particular line of work quite congenial.

How Different!

The agent is dumfounded the following morning to find all the way bills "expensed and abstracted," and the new man on the job with a pleasant face, ready for the day force

When asked how he liked the job, Jack enumerated the good points with enthusiasm and, when he finished, the agent, though feeling a trifle hypocritical, admits that the job is "pretty soft"

Jack goes over to the hotel and, instead of coming back hollering about tough beefsteak and stale eggs, he praises the good coffee and the pretty waitress.

He looks the town over and declares it's a pretty swell little burg—just the sort of a camping-spot he's been looking for.

Heretofore it had been looked upon as the jumping-off place of the universe by the entire depot force.

It had been the custom to sluff all the work possible from one man to the other until nobody wanted to do anything.

Jack, having idle time on his hands, visited the depot frequently during the day. When he saw anybody swamped with work he usually dug in for a couple of hours and helped him out.

The spirit became contagious. It wasn't long before every one was doing his own work and trying to help the other fellow, too.

Hargreaves didn't stay long. The super heard of him. He's now dispelling gloom down in the big office.

Off the Main Line.

I remember a little incident that occurred in the Frisco freight-depot at Parsons, Kansas. The chief despatcher at Fort Scott, in giving me my final instructions, assured me that I was badly needed at Parsons and not to take any chances on missing the first train that way

Being young, I swelled up with importance. On the journey thither I fancied myself quite a hero, speeding to the rescue of despairing despatchers and congested traffic.

I didn't know that Parsons was only the terminal of a spur off the main-line. I supposed that they needed on operator there who could copy a train-order a minute and deliver them on the fly, and hadn't been able to find one until I showed up.

When I arrived I learned that the trains wandered up and down the branch in a free and easy sort of a manner with little attention from the despatcher and with the guidance of about one train-order in twenty-four hours from the Parsons office, which was only open during the day.

I also learned that five other telegraphers had been hurried to Parsons under similar sealed orders and were all still on the job when I stampeded into the circle.

I put forth a few cautious inquiries and learned that a new cashier had just been installed. As soon as the auditor had checked him in, the agent was stricken with typhoid fever.

This left the depot in charge of a green cashier, a boomer operator who had just arrived, and no agent.

Nothing but Soap.

The depot was loaded from stem to stern with undelivered freight. To add to the confusion, a soap concern in Chicago had unloaded half a dozen cars of sample soap on the unsuspecting citizens of Parsons, *via* the Frisco route.

The new cashier had persuaded the section men to store the soap in the warehouse. They had piled it on top of everything else until it looked as if a consignee, seeking a much-needed shipment of legitimate merchandise, had a good chance of waiting for it until Gabriel blew his horn

In the emergency, the cashier sent a hurry call to Fort Scott for help. The chief responded with a liberal supply of boomer operators who had no intention of juggling freight or burrowing under soap-boxes twenty feet high in order to locate a keg of nails for the local hardware merchant, or a barrel of sugar for the angry grocer.

They were all willing to "expense" way-bills, but refused to go any further into that procession of grief which circulated in and about the depot from the moment it was opened in the morning until it was closed at night.

When a wild-eyed patron of the road rushed up to one of us and demanded his freight or a fight, we passed him the vacant stare and, with a negligent gesture, pointed to the bewildered cashier, who wearily invited the excited patron to help himself, and "for the love of Mike" to take plenty of soap, for our only salvation seemed to be getting rid of that saponaceous mountain which defeated all our efforts to locate anything else.

Looked Like a Fight.

There wasn't a man in the bunch who would make the initiative effort to straighten out the monstrous confusion, because we all realized that the first one who dived into that bunch of trouble would have to tunnel his way out or be buried alive.

Accordingly, we all stood pat and made wagers as to how long the new cashier would hang onto the few remnants of reason which he still possessed.

The mob around the depot clamoring for freight was increasing. From time to time an agile patron burrowed his way under the motley collection of soap and household goods and backed out, victoriously dragging his battered and dilapidated consignment and hurling maledictions at the Frisco Railroad, its bonehead employees in general, and the depot force at Parsons in particular. We accepted, with a proper degree of humility, such uncomplimentary remarks as were wafted to our ears from the muttering multitude and lived in hope that a real old-time Kansas cyclone would show up some night and scatter the contents of that warehouse to the uttermost limits of the State.

Finally two of the boomers decided that hostilities between the depot force and the patrons of the road were inevitable.

Having no desire to mix in a riot, they climbed aboard the passenger-train one morning and bade us all a sad farewell.

It was a good thing they did, or that freight deadlock might never have been broken.

Red's Method in Operation.

In return for one of the deserters, the chief sent "Red" McGlory to our relief. From the moment he arrived no one, not even the cashier, thought of accepting responsibility for anything. Red shouldered it all with a cheerful smile—and asked for more.

The moment he presented himself to the cashier I saw a gleam of hope light up the latter's despairing countenance. There was something about Red's cheerful smile and broad shoulders which seemed to say "Let me do it" instead of "Let George do it," as the rest of us had counseled.

The frantically impatient patrons of the road crowded around him before he had been in the depot fifteen minutes and the clouds of threatening hostility gave way before his congenial smile and hopeful presence.

There was nothing impressive about Red. He was tall, raw-boned, freckled, and homely, but he was one of the genuine Sunny Jims.

There was not even a hint of executive ability about Red. He was just a plain boomer operator and knew no more about commanding men than he did about commanding a battle-ship.

He simply sprinkled the sunshine among them and they proffered their cooperation without any further persuasion.

"Let's get about half that stuff out on the platform," he suggested, and the

way that bunch of citizens made the transfer just about broke all speed records for Parsons, Kansas.

"We'd ought to pile the soap at the far end and deliver some of this real merchandise first," he suggested. Dozens of willing hands grabbed the soap-boxes and shifted them to the other end of the platform

When the warehouse had been leveled to a depth which permitted of an intelligent search and the platform was covered with freight in orderly distribution, we all grabbed a bunch of way-bills and got busy delivering freight.

By evening we had disposed of about two-thirds of the junk.

But do you suppose that any one else could have pulled off that stunt? Do you think we could have persuaded that bunch of town merchants to dig in and hustle freight for us like that? Not if we had a howitzer trained on them.

Instead of inspiring their confidence and winning their cooperation, we called out their hostility. We didn't have the Sunny Jim combination.

And if you ask me what forms that combination, I'll tell you.

It's a lifelong search for the bright side of the universe and a total disregard for the somber hues.

A man or woman who has been steadfastly gazing on the silver lining beyond the clouds of life is bound to radiate a cheerful, hopeful influence.

I do not claim that Red McGlory acted as a booster, as the word is generally accepted, when he cleaned up the depot at Parsons. I simply wish to make it plain that if he hadn't been a booster he could not have succeeded.

In later association I observed that circumstances never stacked the cards for him in such a way that he couldn't find some good in the situation.

The genuine booster is the man who, when his trousers are out at the heels, congratulates himself that they still fit well around the waist.

Who can't afford a sirloin for breakfast, but finds genuine satisfaction in the fact that coffee and rolls are less liable to produce indigestion.

Who sees a fellow mortal falling down on the job and jumps in and helps him to make good instead of criticizing his efforts.

WIRELESS WONDERS OF THE FUTURE.

WIRELESS greetings were flashed from the San Francisco navy yard to the Secretary of the Navy in Washington, thus covering the entire continent. This wonderful progress in wireless telegraphy gives particular interest to some prophecies made by Marconi as to the application of the wireless to other uses than telegraphy, says *Express Gazette*. It is truly a wonderful picture that Marconi draws, and were it not that he is a practical man rather than a dreamer, it would be hard to believe some of his predictions.

For one thing, Marconi says that the wireless will "make war ridiculous." How this will be done he does not explain, but on some of his other predictions he is more specific. In a recent magazine article, he says he looks forward to the time when the lighting and heating of our great cities will be done by wireless. What that would mean to the beautification of cities by removing the wires of the electric lighting companies and doing away with coal smoke it is not difficult to imagine.

If this can be done, the problem of the future of our coal supply will also be solved. Many eminent authorities in the scientific world have advanced the theory that the coal supply of the nations is nearly exhausted, and have predicted that either some invention must be found which would harness some other energy of nature to take its place, or that a time would come when the race would be literally perishing from cold. If Marconi is correct, the worry about coal need not bother us any longer.

Another application of wireless which Marconi foresees is its application for power transmission, which, he says, will no longer be brought about in the present cumbersome way, but will be the result of that "invisible earthquake" or "vibration of the ether" which is the latest marvel of electricity. Instead of being propelled by enormous turbines, as at present, the ocean greyhounds of the future will receive their impetus unseen through the air; the locomotives of to-morrow will be propelled by the same force, and mills and factories will be operated by the same subtle energy

The effect on human health of these changes, through doing away with pollution of the atmosphere by smoke, would be very great.

Observations of a Country Station-Agent.

BY J. E. SMITH.

NUMBER SIXTY-ONE.

ROM time to time the magnificent military establishment of this vast and glorious U. S. A. runs short of husky country lads and village youths, whereupon striking lithographs in bright colors of grand and pompous soldiery are sent out to be posted in public places.

You have seen them in post-office lobbies, and the railroads are asked to lend a hand by posting them conspicuously in their waiting-rooms

They are there for the eye of the strolling, unemployed young man. When he sees a colonel astride a spirited, bow-necked horse, petty officers standing in respectful attention and privates clad in immaculate regimentals, he is presumed to be at once seized with a desire to enlist and become one of his country's defenders.

Our ticket man received one of these lithographs with the request that it be displayed

He posted it in the ladies' waiting-room.

I called his attention to it

"The government," said I in mild reproval, "is not letting out this call for militant suffragists. This is not an appeal for more window-smashers or Red Cross nurse recruits. It is a call for soldier boys. Seems to me a child would know that the place for the poster is in the men's waiting-room, where it will be seen by young men and boys."

"Thank you," replied the ticket man. "I know exactly where to hang 'em. Maybe you remember last summer when the Thirtieth Regiment from Fort Sheridan marched to Fort Harrison and camped a day and a night near our peaceful little city. Everybody went out to greet the soldiers.

"I personally escorted two very estimable young ladies to the camp. It was a soft summer evening with a lingering twilight. The military band gave an open-air "Poet and Peasant-Narcissus-and-Largo" affair.

"Up to this moment both the young ladies had always looked on me with respect—I may add admiration. In their sight I had always appeared as a worthy young man. Not exactly as a half-back, understand, or as a statuesque Greek athlete, but a fair to middling, good to look upon company.

"When we got out to the camp and the girls met and talked to young captains and lieutenants, I began to grow smaller and smaller until they had to light a match to find me when they got ready to go back to town.

"All the way back they were in ecstasy talking of the colonel, the captain, and the young lieutenant. They were nice home girls, and I had always harbored a conceit that I was some *it* in their estimation.

"I shriveled to nit minus. I went down so far below zero that I shrunk up into the bulb and entirely disappeared. They used up all the words that describe. They started with 'splendid,' hopped over to 'magnificent,' to 'stately,' 'gorgeous,' 'noble,' and 'sublime.' There

Series began in the July, 1907, Railroad Man's Magazine. Back numbers for sale at this office.

were a lot of second-rate words like 'grand' and 'dignified,' but I withered up so small that I lost a lot of them

"I have never been anything but a nincompoop since. I am a shrunken and deformed specimen of *genus homo*. If they had not seen the military heroes on parade I would always have been something of a gallant; but it put the vanishing sign on me. I will always remain short weight.

"Ever since that eventful evening when I get one of those colored lithograph invitations for our wavering youths to come to the front, I post 'em in the ladies' waiting-room, where they are sure to be looked at and admired. Instead of a suggestion of strife and slaughter, and the adventures of war, they become works of art, and are looked at in wonder and admiration.

"What do I care for 'the front'? I know what pleases the eye of our lady passengers. There's where I hang 'em in the ladies' waiting-room, and that's the why. While other stations are appealing for raw recruits for the fighting ranks, I am inspiring angels for the hospital service and filling hearts with romance. Isn't that a pretty neat service to be doing one's country?"

The ticket man was interrupted by a face at the window.

"When," asked a voice, "does the next train go?"

"East or West?"

"East."

"At 2.54."

"What, not till 2.54? I thought it went at 11.30."

"Where are you going?"

"To Sweetser."

"That is west."

"Well, I meant west. Did I say east?

"That is the way it goes," explained the ticket man. "A passenger will ask

"I WENT DOWN SO FAR BELOW ZERO THAT I SHRUNK"

for a train east when he means west, and north when he means south. When a ticket-man gives the information asked for and the passenger finds it is all wrong, he blames the ticket-agent, and wonders why railroads always hunt out the prize boneheads for their ticket-offices.

"No ticket-man should give any passenger information of a train when nothing but direction is indicated. No passenger will ever admit that he asked wrong. Passengers are never mistaken. It is the ticket-man who is always wrong. He misleads and misinforms the passenger.

"When they say east or west to me, I answer, but I come back with the question, 'Where to?' There is where I find that the east man is going west, and the north man is going south.

"This is the hunch for all ticket-sellers. Ask 'em, 'Where to?' Then you know you have given the answer straight."

It is necessary for a ticket-man to be careful and guarded in his replies to passengers' inquiries. When I was first selling tickets I found myself using the word "now" in the wrong place, and it was some time before I got the intruder out for good. It was thusly:

"When is the next train to Marion?" asks the passenger.

"Now in ten minutes," was my reply, with the usual pleasant assurance.

"An hour and ten minutes?" shouted the passenger in surprise.

"No, *ten* minutes. Now in ten minutes."

I discovered that when I unwittingly rang in the word "now" it came through to the passenger as "hour." I found that the word "now" should be eliminated. That is hunch No. 2 to ticket-sellers.

"Is that Western Union time?" asked a voice at the window.

"Yes, sir," replied the ticket man "That is standard time."

That is asked frequently. Time is officially described in railroad literature and elsewhere as Eastern, Central, Mountain, *et cetera*, but ever so often a straggler comes in wanting the "Western Union" brand. It is like canned goods. The user wants a particular trademark.

For a long time I was puzzled why they demanded Western Union time. I asked a likely looking chap one day why he wanted that particular make. He answered in some surprise:

"Why, don't the ball fall on the capitol building just at twelve o'clock, and don't the Western Union telegraph it right on the dot all over the continent?"

Something like that does occur every day, so people are not so far off, after all. I take it we all have a stock of queer expressions that have appropriate parentage if known.

When you tell a passenger when his train goes, whether in twenty minutes, forty minutes, or one hour, he invariably comes back at you with this:

"What—not before then?"

That is rather a foolish response on the part of the passenger, and the raspy ticket man always has the impulse to retort:

"If it came before that I would tell you so."

We high-class ticket men soon learn to smile and return an assurance that nothing comes along before the minute indicated.

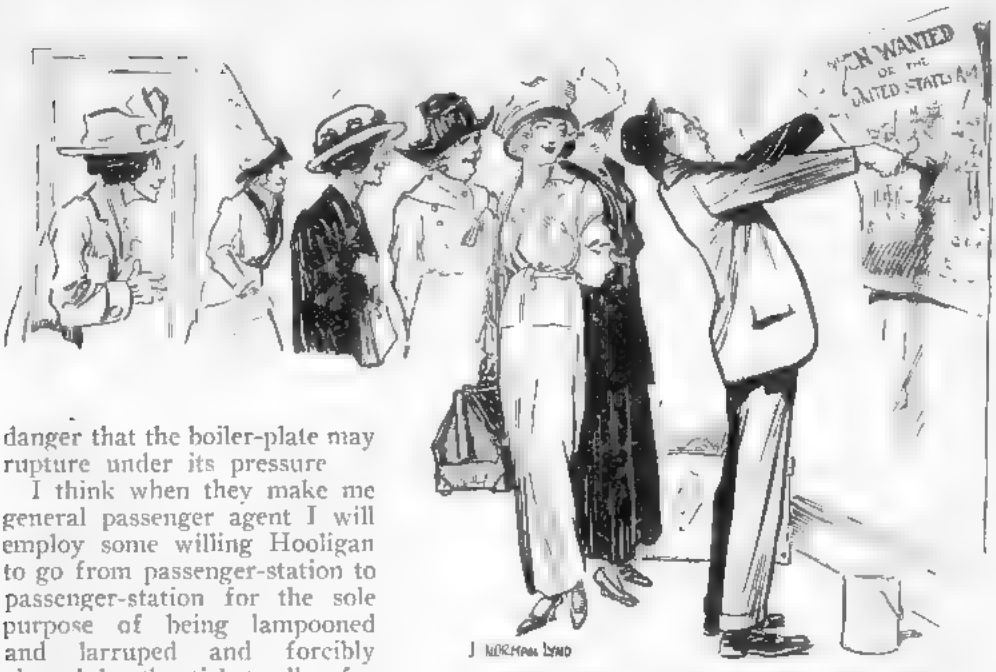
It never pays to rasp. People ask us foolish questions and they are provokingly persistent, but all the injunctions from every angle to the ticket man is "Keep smiling." It doesn't matter whether your liver is working right or not.

I admit, kind sirs, that the forced smile is the saddest duty a ticket man has to perform. In the tangle of human emotions he must always appear in the garb and pretense of cheerfulness. No note is taken of the little glooms tugging at him. Only elfin joys are seen flitting about his quarters. All the day and under all conditions he must appear in make-believe graciousness and with assumed politeness.

I hold that every ticket-office should be provided with a padded cell, a dank, dark, dead-wall recess, wherein at intervals the ticket man can shut himself in and beat his head and torture his soul with the nitro-glycerin sentiments that are in him.

Then he would emerge in better trim for the next batch of patrons.

There is a certain effervescence in human feeling and there is always some



"I KNOW WHAT PLEASES THE EYE OF OUR LADY PASSENGERS"

danger that the boiler-plate may rupture under its pressure

I think when they make me general passenger agent I will employ some willing Hooligan to go from passenger-station to passenger-station for the sole purpose of being lampooned and larruped and forcibly ejected by the ticket-seller for the purpose of assuring and maintaining the ticket man's mental equilibrium and balance, thus leaving the best in him for the legitimate patrons

A passenger once bought a ticket and passed in a fifty-cent piece He was of the light-hearted order with a whistle on his lips and a flippant word on his tongue's end.

"Don't you wish you had all the money you take in here?" he asked with genial innocence "What would you do with all of it eh?"

"Say," replied the ticket man sadly, "you should not start a string of reflections like that. It is not serving a man right who is on small salary and under a heavy bond, to get his imagination working in that way."

That is another question that is put to a man through a ticket window many times in the course of a year. I do not suppose any man ever handles money who does not dream a little of what he would do with it if it were all his

The reel runs out like the imagination of a child, all sorts of visions, delusions, and fancies. He spends here and he lavishes there his chimerical wealth in prodigal philanthropy. He aids and he relieves, and he becomes at once the nimblest little all-around rescuer of the unfortunate that ever created a stir. He does good to every one with his fantom money. All of us are that way.

But, mind you, when one of us lively little visionists does, by some odd twist, get our tentacles on the gold deposit, we forget all the noble impulses of honest poverty We can't see anything but the undersigned

"Pittsburgh. How much?"

"One way or round trip?"

"Round trip."

"Fifteen forty."

The passenger let out a whistle, either of surprise or protest, but produced the amount of the fare

"Say," said he, "what would you do if you had all you took in?"

"Do? What would I do with it? I'd do my dead level best to double it. I'd be a loan shark or a promoter. I'd buy a 'sucker list' and try and make something of myself. I'd sell mines, cactus plantations, sand dunes, or stagnant-water plats until I got fatty degeneration of the machinery.

"Then I suppose there would be a few soft words by a fashionable minister, a truck-load of lilies and white roses

and ferns, and pretty little 'grab hooks' would be laid away in a marble mausoleum with a hopeful line from the Apostle Paul over the portal."

"Too bad you cannot have all of it," said the passenger. "Seems like a shame such a noble career is not possible for lack of funds."

Might as well tell him that as anything. It is all Jimmy-pipe, anyway.

A young man in rather flashy raiment came up to the ticket window the other day and I presented attention.

"Yi-yi-yip-yip-yip!" said he.

"Rah! Rah! Rah! Out with it!" I responded.

"Y-y-yi-yip-yip-yip"

"You fellows make me tired," I said. I thought he had the high-schoolitis. Their lung exercises get my goat.

"Yip-yip-yip"

"Yup-yup-yup," I added with all possible sarcasm.

He gave me a sad look, gulped a number of times, and went at it again

"Y-Y-Y-yip-yip-yip!"

I interrupted him again. "My friend," said I, "when you get to the zip-boom-ah section of that gibberish, rap on the counter and we will resume the session."

"Yip-yip-yip!" Then came a sudden explosion. "Yip-Yipsilanta, Michigan."

The poor fellow stuttered, that was all. It was an affliction. He was doing the best he could to tell me where he wanted to go. He was not turning some college exhaust on me. He was in torture and torment to pronounce the word I added to his distress by my fool remarks.

It seems natural to make breaks of that kind. Not long ago I went through the Independent Order of Hoot-I-Toots. I got all the symbols and signals. The next day a brother appeared and gave me the sign of distress. I did not exchange any words, as other passengers were at the window.

I threw him a half-dollar in tentative relief. It appeared to be all he expected—more, in fact, for he looked surprised. When it comes to being a lodge brother I am one to the last ditch. He whipped out a pad and a pencil and he wrote, "I thank you. Give me a ticket to Renner."

He was not giving me any sign. He did not even belong. He just accidentally hit the combination. His motions to me were that he was deaf and dumb. He had more money than I ever had, but he kept the half-dollar I gave him. I did not squeal, whimper, or beg it back. Up to fifty cents I am a dead game sport.

I was too proud to acknowledge any mistake. All the same, hereafter, all distress signs must come in triplicate before the P. G. D. gets any answer from me. Anyway, I curtailed the cigar supply for the next few days until I figured I was even. I earned his thanks. Not out anything, am I?

I acknowledged the broad principle that when any one's thanks are earned at an outlay of not to exceed fifty cents, the investment is not a bad one.

Many trifling incidents occur in the daily run of duties in a ticket-office that bring a passing blush of embarrassment to the ticket-seller and often to the passenger.

Last summer during the vacation rush I had an assistant. The arrangement and forms were new to him. I stood by while he sold tickets to advise and inform him.

When you want to add to a ticket

"A BROTHER APPEARED AND GAVE ME THE HIGH-SIGN OF DISTRESS"

man's work and worry give him a green assistant. In any railroad office untried help is a positive handicap to all concerned.

Railroad forms and practises are different from any other kind of work. A new man requires a number of days before he gets his lines sufficiently to make himself useful.

But enough of that. Here's to the plot.

A little woman appeared at the window. She had a delicate face and an air of refinement. She was quite ignorant of all the requirements of travel. She had some difficulty in making herself understood. At length, when everything was clear, she offered a modest little apology.

"Really," she explained, "I am sorry that I am so densely ignorant. It is not often you have a passenger like me who knows really nothing—is it?"

I assured her they were very common. Then I addressed my assistant regarding the ticket.

"Make up a blank form, Jim."

The lady crimsoned.

"Sir?" she demanded.

"I was addressing my assistant," I replied blandly. "I was instructing him what ticket to use. Local blank, Jim."

"But I do not care to be pointed out that way," she protested with some vigor. "Even if I do not know anything about traveling, I do not care for you to give me a ticket that announces to every one that I am a blank. It is the first time I ever knew the railroads had particular kinds of tickets that tell the conductors and every one else the kind of a passenger traveling on it. I do not think I will go."

I saw the point. She said she knew nothing, whereupon I called out to my assistant, "A blank form, Jim."

I hastened to straighten out the tangle. I convinced her that a blank form bore no relation whatever to her and her stock of travel information. It was the ticket that was blank, not the passenger. We both laughed at the ridiculous conclusion she so nimbly reached on my words, "Blank form, Jim."

Another woman came in. She was slim, hollow-eyed, and sunken-cheeked. She coughed nervously into a delicate cambric.

I breathed shallow, for I imagined she floated a battalion of tuberculosis germs with each word she passed to me through the window.

She wanted an inter-line ticket to some remote place *via* an irregular route.

Noting her languor and emaciation, I had the thought that this would probably be her last trip. I marked her as a victim of the white plague.

"What form do we use?" asked Jim.

"Skeleton," I replied.

"Skeleton," repeated Jim.

"Yes," I instructed. "Use our regular skeleton form."

The lady startled with a visible shock.

"A skeleton ticket!" she repeated with decided umbrage, but in a voice of good volume and resonance. "Because I only weigh ninety-eight pounds you are going to sell me a skeleton ticket. Of all the disgraceful and insulting designs! Of all the—the—"

Evidently she would have run out a long string of protests and imprecations, but the paroxysm of a cough cut her short. I saw the implication and hurried out the necessary explanation.

The word "skeleton" bore no reference to her ninety-eight pounds. It had no bearing or relationship to her unfortunate physical condition. I was particularly lucid in explanation.

The word "skeleton" was only one of our terms indicating that no printed route or destination was on the ticket form; therefore, it was termed a skeleton ticket.

She accepted my word for it and appeared relieved.

This reminds me that care should be used in bandying terms which, familiar enough to a ticket man, are not understood by a passenger, who may easily misinterpret and wrongly apply them.

But that is not all the trouble a ticket man may have because of what appears or does not appear on the ticket.

Did you ever see our ironclad signature, tourist tickets?

On the margin we punch with our "L" punch a description of the purchaser, which, along with the signature, enables the destination agent to assure himself that the return passenger is the one who originally purchased the ticket. On one square appears the words "Blonde. Brunette. Neither." On an

"I WAS A LITTLE HEAVY AT ONE TIME, I CONFESS."

other, "Slender. Medium. Stout." On still another, "Young. Middle-aged. Old."

I prepared one of these tickets one day for a lady passenger

She was flub-dubbed and furbelowed like a fashion hint from Paris. She was what I think you term a "peroxid blonde"—dark haired originally, but chemicaled yellow. She was fat—decidedly. She had seen fifty years, possibly more; but by ingenious applications she was concealing the evidence of the last fifteen or twenty of them.

She signed her name under the contract of the ticket I prepared for her, when I informed her that I would have to indicate a description of her on the margin

I read aloud from the first square: "Blonde. Brunette. Neither."

"Why, blonde," said she smilingly. "Blonde, of course," as if there could be no possible doubt

It was debatable; but somewhat reluctantly I punched "Blonde"

It pleased the lady

Then I read the second square: "Slender. Medium. Stout."

"Stout?" I observed tentatively.

"No, sir! You may mark it 'Slender.' Positively, sir! I will not accept it marked 'Stout.' I *was* a little heavy at one time, I confess; but I am now quite slender. Indeed I am, sir!"

I was at great pains to explain that the description must tally with the passenger presenting the ticket, or there would be trouble on the return trip

At length we compromised on "Medium." Then I read the last square: "Young. Middle-aged. Old."

She struck an attitude of decision. She put her finger on the ticket to the word "Young." "You may punch the word 'Young,' sir," she demanded.

Now, I argued and expostulated for a half-hour with that aggregation of feminine vanity, but she never budged the width of a hair and the session became dead-locked. She would positively not accept the ticket on my reluctant offer to compromise on "Middle-aged."

It had to go as "Young."

How did we settle it?

She did not take the ticket. Rather than have any other implication than "Young," she decided to forego the savings on an iron-clad descriptive tourist ticket, and bought a regular one-way at straight fare which indicated nothing beyond the fact that the passenger was an adult. What is a little money to a woman to the odium and stigma of "Middle-aged" or "Old?"

Here is the oldest ticket-seller joke:

Scene: The Amboy and Camden Railroad. Time: Eighteen hundred and thirty something. A foxy maiden lady of forty at the window.

TICKET AGENT: "Single or ——"

VIVACIOUS BUT BLUSHING SPINSTER: "Am now; but I won't be after June 13. Te, he!"

If you can't begin where you want to, begin somewhere else; but—BEGIN!

Honk and Horace.

BY EMMET F. HARTE.

Valhalla Has a Sudden Attack of Foreign Invasion But Our Old Friends Retain Their Social Caste.

ALL on an early summer's day there came to Valhalla Count Antoni Filippo Finola with his man and three steamer trunks. Think of that! Several of us saw him disembark from the train, but the full significance of his arrival didn't appear till later.

The count's man let it drop that his boss was of the Neapolitan nobility, while engaging a part of one whole floor of the Palazzo—there's a name with a good Italian ring to it, by the way—and by bo's'n's watch it leaked out that he was globe-trotting purely for amusement, and incidentally chanced to be one of the few sure-enough rich titled gentlemen running at large, his fortune being estimated at a couple or three million ducats or sesterces or some such named mazuma.

As a rule, foreign money, when translated, really amounts to a mere peccadillo; but when Honk and I took the trouble to figure it up at 19.3 cents, U. S., the count seemed to be tolerably well heeled after all.

And, contrary to your expectations, it must be recorded that, personally, Count Antoni was imbued with a kind of dusky, olive, Italian, manly beauty that was really noticeable.

Somebody said he had the face of an old master, whatever that is. Anyhow, he had the round cheeks, smooth skin, dark eyes, and fine teeth of a girl in an olive-oil ad. Include, in addition, that his voice was 'cello music, that he was aged about thirty, that he spoke English better than the man who invented it, and you'll readily see that he couldn't long remain hid under a bushel.

Nor did he. The exclusive set nabbed him instanter—nabbed him with the gusto of a kingfisher falling forty feet off a dead limb to grab a shiner. Mrs. Fairleighbridge led the onset, and Mrs. Fairleighbridge being the, or, at least, an acknowledged social arbitrix, obviously the One Hundred fell all over itself getting its butterfly nets unlimbered for the capture of the count, which made it nice for him—yes.

But the mistress of The Pines, having seen him first as 'twere, stood on her rights. True, she loaned him around at teas and such like, and permitted other folks to glimpse him on occasion, but otherwise it was "hands off!"

Mrs. Fairleighbridge, as she herself often remarked, was descended from a line of Saxon kings, hence she freely rejoiced that she had at last found some one who was her social equal—a lucky thing, indeed, in this day of ancestorless upstarts and plebeian parvenues. However, there were some that spitefully mentioned the fact that she had a marriageable daughter.

Be that as it mightst. I find I must digress a moment.

Honk, realizing that the work interfered with his social aspirations, had for some time been yelping for extra helpers around the station. The company, after weighing the matter, finally consented to our hiring as many Fridays as we chose, just so the total salary expenditure for any one month didn't exceed forty dol-

lars. So we inserted an S.O.S. call in the afternoon paper. Wanted: An ablebodied, unmarried man—well, about the same qualifications required in the army and navy, in fact.

Four applicants responded, two of whom came too late, and the third lost out because he didn't come at all. He wrote a note.

The man we signed on was a stranger, so we inquired into his biography a bit. The name he gave was Albert Leighton, lately of England. He confessed to being unincumbered, twenty-two, hungry, out of money, heart, friends, at the toes and elbows; but as he didn't seem to be cherishing a grudge at anybody on account of these minor annoyances, we dubbed him Bert for short and all went to the Medicine House for supper.

For a day or two there seemed more or less of watchful reserve behind Bert's outward show of childlike simplicity. Then he got the swing of our free and easy existence and became assimilated.

It developed that in reality he was a gentleman and a sportsman. He could wrestle, box, fence, and swim like a trout. He was an ex-Rugby football star, a cricketer, oarsman, amateur golf, polo, and tennis enthusiast, and was crazy to learn baseball, basketball, and bowling.

As a personal favor, Honk and I tried to teach him the rudiments of the great American game of draw poker, but he accidentally won all the money we had with us at the first lesson, so we decided to let him learn the game by himself.

To resume:

If Mrs. Fairleighbridge had been picayunish before she got hold of her Italian count, how much more haughty and particular did she become afterward? Marry, I trow, and gadzooks! She simply cut all ordinary people off her list. Honk and I, of course, were among the expurgated. Having no feverish anxiety to shine as a smart setter myself, I made shift to survive this blow, but Honk let it irk him considerably. He brooded over it and even came off the nest now and then to cackle about it.

"Soirée at 'The Pines,' last evening," he said one morning. "We weren't invited—so you could notice it, Horace. An out and out snub."

"So?" I murmured. "Well. Funny I don't feel so very much put out"

"Ah, but it makes me wroth!" he said bitterly. "The idea of being snubbed by a snob is what grates, my boy. You know I come of an old revolutionary family"

"Yes, I know," I said, and hiked.

Under the circumstances, it was gratifying to know that we still had the *entente cordiale* at the Armitages' P. Q. Armitage and family lived down the lane half a mile or so from "The Pines," in their splendid suburban retreat "Woodwine" and, taken all in all, their social status was nipping close to that of Mrs. Fairleighbridge.

In fact, there was a ghost of a possibility that Mrs. A. might one day oust Mrs. F. from the job of arbitrixing, so we had at least a fighting chance for show, if not place. And with P. Q. himself, Honk and I were as thick as three crooks.

In passing, Mrs. Armitage gave a meadow-lawn celebration one evening in honor of Sybil, the youngest girl's hay fever or something.

Honk and I were bidden. We left Bert on watch in the Medicine House to see that nobody purloined the depot, and drove out to "Woodwine" on our new red tandem motor-cycle.

Everybody who amounted to scarcely anything was either already on hand or momentarily expected. The Dupont-Skaggses, the Allyns, Arbuthnots, Finleys, Parkinson-Crowleys—even Clancy Chitwood, um-ah! And Mrs. Harry Higgins—dear lady, I do believe she is actually getting stout. Heighho! Age do certainly sneak upon us apace.

Having parked our motor-cycle, Honk and I joined the nearest group of merry-makers and proceeded to make merry or as merry as we could. They were playing "Drop the Handkerchief" on the far-famed Woodwine lawn, and Alicia Fairleighbridge, daughter of her mama, was among them. I noticed her staring at us in a frank, unstudied way.

Pretty soon Stell Dupont-Skaggs coat-lapeled us, dragged us over, and formally presented us. As near as I can remember, I've been presented to Alicia maybe half a dozen times since we made our several débuts in society. However, there are lots of folks you have to be

introduced to every time you see 'em in order to keep up an acquaintance, so I thought nothing of that. But, on this occasion, she seemed unusually effusive. She claimed she'd heard of us, and always hoped some day to meet us, and that sort of blarney.

Honk refused to unbend much, and presently drifted away.

Alicia froze to me. "Oh, Mr Um-m-m, rully," she cooed vivaciously, "how droll you are! I—do you know, I wonder if I might ask you something?"

"Sure," said I. "Go as far as you like."

"Oh, dear! I'm just consumed with curiosity. Who is the tall, handsome, distinguished-looking young man that's visiting with you and ah Mr. Simpson?"

"Why — er —" I groped, "do you mean the fellow in blue overalls and white sombrero, and —"

"Yes, that is he. Several evenings ago we were at the station to meet my aunt, Juno Heathcote, from Boston, and I heard your friend singing the Toreador song It was grand. I was carried away, rully. And he looks like an athlete "

"His name's Bert," I said briefly. "He is quite a caroler. Knows eight or ten operas by heart. But you ought to hear him warble 'Oh, You Beautiful Doll!'"

Miss Fairleighbridge giggled gurglingly. "Sh!" she said. "Don't tell any one I told you, but I think he is perfectly charming, rully " What further she might have said on the subject was cut short by Honk, who cavorted into the conversation again.

"What do you think?" he prattled. "Next thing on the program is to partake of ice-cream and cookies in the boat-house, and then everybody's going with lanthorns to search for buried treasure in Greasewood Grove."

"Oh, isn't that too weird for anything!" exclaimed Alicia. "Both of you shall escort me—" offering a lily-white flipper to each of us.

But — at that moment the mountain fell on Mohamed! The rails spread, the boiler blew up, and our train of events went into the ditch. Mrs. Fairleighbridge swept around a curve, running wild, and smashed right into our midst, head-on.

"Allie, my child!" she gasped. "Come! Come with me instantly, dear!"

Her look conveyed horror, disgust, sneers, fire, murder, snakes, burglars, woolly worms, help, help, police!

A dozen or so gaping spectators gathered.

"Why, momma, we're going to search for buried treasure," quibbled the girl.

Momma stamped an impatient foot. "No!" she said. "Not with these— these persons, Alicia. Count Finola is waiting for you, child. Come at once!"

Honk turned red, white, and blue, like a flag, and dropped the young lady's hand. I attempted a look of mild amusement, failed, and slyly relinquished the young lady's other hand. That person, finding herself thus detached and at liberty, pouted, hesitated—and allowed herself to be led away.

"This is the deplorable feature of these mixed gatherings," I heard the older woman say. "One comes in contact with so many utterly impossible people every way one turns."

I agreed with her. One did run across quite a few distasteful people now and then. For a nickel I'd have stalked after her and given her a piece of my mind. Honk, however, blew up on the spot.

"Why, why—" he ki-yied, "that *passé*, old virago! Who is she to cast instigations at us! I'll," *et cetera*

In order to save his dignity and prevent him from giving an impromptu imitation of a common, plebeian sorehead, I shooed him to one side and proposed a proposition. I offered him the choice of accompanying me home at once or staying on and hoofing it by himself later, seeing that I intended to take the motor-cycle and beat right then.

After something like three seconds' deliberation he decided to accompany me, so we paid our devoirs to host, hostess, *et al.*, and rocketed up the lane

At home, shortly afterward, I removed the embargo, and Honk went ahead with what he deemed applicable or elucidative to the subject under discussion. He waxed so eloquent that Bert was awakened by the rumpus and got up in his nightums to see and hear what 'twas all about. With this addition

to his audience, Honk launched himself on further billows of vituperation.

"That — that woman!" he boomed. "She gives me an ennui. Her so-called count has gone to her head! I'd like to humble her false pride! We're common cattle, are we? *Canaille!* Rowdies! Low-brows! Nobodies, eh? Hah! We're 'these persons'! Maybe there's a time coming when — woof!"

"Do you mean to say that the lady called you all that?" asked Bert. "I'd bring an action for libel. What had you done?"

"You see, she caught us holding her daughter Alicia's hands," I explained. "She didn't actually call us those names, you know. She just *looked* 'em at us."

"Ah, I see," said Bert. "You were making love to this Miss Alicia."

"No!" shouted Honk. "We were not making love to her! Zounds! The idea!"

"Then you don't care anything for the girl?"

"No! I should say not! We don't care anything for any girl! W'ff!"

"Then what was the quarrel about?" demanded Bert dazedly.

It took us another hour to make the situation clear to him, after which he was more befuddled than ever. Nevertheless Honk was firm in his resolve to yank Mrs. Fairleighbridge from her high horse, if a suitable opportunity presented. And so, vowing vengeance, the meeting adjourned and we all went to bed.

Several days after this display of unseemly emotion Bert and I were returning from collecting a freight bill at the city hall. For exercise we made a little détour out in the country on the red motor-cycle. In fact, we'd been swimming in the reclamation reservoir. I remember that I had just executed one of my famous pirouettes around a long, rakish curve in the bullyvard when whom should we meet but Alicia Fairleighbridge and Jessamine Finley driving a bob-tailed bay stepper attached to a stylish conveyance called a "dog-cart," if I'm not mistaken.

Alicia was modishly gowned in baby blue, and hat to match. She wasn't hurtful to the eyes, either, sitting there with the breeze blowing her flaxen tresses. Jessamine Finley—came near forgetting her, by Jove! Jessamine has three redeeming features: Money in her own right, money on her mother's side, and her papa's wealthy.

The bob-tailed bay stopped when he saw us coming — stopped, looked, and listened, with one ear flicking back and forth and his eyes rolling. Alicia, who was driving, pushed on the lines and made that unspellable sound which is currently employed to stimulate a horse or propitiate a dog. The horse displayed nervousness and instability. Ah, a word with an equine flavor, that, eh?

I took in the terrible situation instantly. I throttled the engine, applied the retarders, and administered such other emergency measures as would tend to arrest our headlong flight. We stopped, Bert leaped off, ran forward, grabbed the bit or bits, and, lo, the tragedy was averted. Both damsels came out strong on the gratitude. They seemed to feel very much rescued. Noting the trend of public opinion, I tripped over to share in the honorary rewards.

"Deah me, how frightened we weah!" burbled Miss Finley. "How grawnd of you gentlemen to save us! Thank vuh so much!"

"I felt perfectly safe," sighed Alicia, 'as soon as Mr. — ah — when ah m-h-m had seized Queenie's bridle, you know."

"Quite so," said I. "'Twas neat work."

"Naughty!" murmured Alicia to me, in a loud aside. "Aren't you going to present us?"

A thought sprouted suddenly, like a prestidigitator's pomegranate-seed, in the hotbed of my busy brain. The opportunity was indeed auriferous. I threw discretion to the winds, tore up my return ticket, and set fire to my bridges.

"Ah, yes; pardon me!" I apologized. "Miss Fairleighbridge and Miss Finley — Lord Leighton, of England."

Bert bowed low. The eyes of both girls stuck out like newly peeled Bermudas.

"How sweet!" they gushed in chorus. "How rully noble of you, Lord Leighton."

"No trouble at all," said Bert. "Please don't mention it!"

But they insisted on mentioning it,

and continued to keep on mentioning it; they declared that his action—*his*, mind you—had been nothing short of splendidly heroic. I presently noticed that I had become quite superfluous, so I ambled away a little distance. I wasn't missed apparently. I smoked while waiting for the bouquet-throwing to abate. After a long time it did abate a little, and presently the two thoroughly idiotic young women woke up Queenie to proceed on their precarious way, in a sort of pink daze, I gathered.

Within the hour things began to happen. I seemed to have started something. The One Hundred bestirred itself to get in touch with us. The J. Carter Finleys phoned, and so did the Dupont-Skaggses; Mrs. Parkinson-Crowley came past in Clancy Chitwood's car and waved; the Misses Arbuthnot despatched a pale-blue note by hasty messenger designating Tuesdays or Thursdays.

Meanwhile we held a conference of roughnecks. I was disposed to hedge, but Bert was nonchalant and Honk filled with an unholy desire to gloat.

"Lord Leighton, 'did you say?" he chuckled. "By Jove, that's good! An earl ought to put the fixings on a mere count, I hope. We'll make 'em hunt their holes. Ha! Bert, my boy, you must have some clothes for the part. Horace and I will foot the bills—"

"I—er—" I murmured

"I say Horace and I will see to that!" repeated Honk, raising his voice. "And then we'll give a big blowout at the club as an entering wedge. The rest will be easy. All that's necessary is to leave everything to me and obey my instructions, see?"

Bert grinned good-humoredly. And, strange to say, everything went well. We gave a dinner at the club and a luncheon at the Palazzo, presumably in celebration of the laying aside of Lord Leighton's *incog*. The bogus peer got away with his part of it just like shooting fish. He was accepted on his face and voted a boon and a treasure.

A great furor of receptions, teas, and other gay gatherings followed. Calculating mamas and sophisticated daughters, with a weather eye on the main chance, began to camp on our British friend's trail. Honk relegated to himself the credit for it all.

When I say our titled gentleman made a prompt hit socially, I must qualify this assertion in one particular—Mrs. Fairleighbridge being the particular. Lord Leighton, so called, made no marked change in her plans. She seemed to cling to the theory that a count in the harbor was worth several earls in the offing, so she continued to deify her bit of the nobility.

Alicia, however, surrendered unhesitatingly to the enemy. She concocted excuses to bring herself into the presence of our erstwhile helper. Nor was that worthy youth offish concerning Alicia. They were together a lot.

And soon Bert graduated entirely from anything that remotely resembled work and spent the major portion of his time week-ending and house-partying hither and thither. Honk, too, went in for everything, and with both of them off galivanting most of the time, I had my twenty-four hours' work daily cut out for me. Ah me!

One dulcet evening I ditched my duties long enough to go with 'em to a doings at the Dupont-Skaggses' place, "Stonyhurst." It was supposed to be informal, so I wore my golf suit.

We went in a taxi. Having arrived, I found everybody else but me in evening togs, so to avoid being a cynosure, I hit for outside to smoke and meditate.

I strolled. It was a dull outfit. Some were more or less occupied listening to a Chopin autopsy in the drawing-room, but a great many others were engaged in desultory tête-à-têtes in pergola or rose-bowers, while others congregated in chattering groups on the lawn, or, like me, merely strolled.

The darkest summer-house of all was deserted. I sat down, and, being aweary to begin with, presently dozed. But an untoward circumstance broke the spell of my pleasant reverie.

There came a crackling of twigs, as if some one were hastily making a retreat through the shrubbery! Then a dark figure loomed in the doorway of my place of concealment. In the dim light I recognized Honk. He was laboring under some excitement apparently, as he was breathing like the leading lady does when Raoul McMusser makes his demand for an absolute divorce and custody of Fido besides.

"What ho!" said I.

"Horace!" he muttered, "Horace! I've discovered something! An astonishing thing has happened! Come! But be very quiet about it, or they will hear us."

They? Who, I wondered. But I rose in my stealthiest manner. Honk in the lead, we sneaked forward in the gloom. It was very adventurous and interesting. Reminded one of the dear old romantic days when a man never knew what minute somebody would leap out from behind an old inn and stick a Toledo blade through his thorax.

Honk and I stole silently yet a few paces farther into the coppice—I momentarily expecting to come presently upon the body of beautiful Genevieve lying with a dagger in her heart, or some such inadvertence — then Honk paused, parted the leaves, peered guardedly, and pantomimed that I might look. I needed no second invitation.

I glued my pellucid eye to a convenient crack in the foliage and gazed raptly.

Bert, our forty-dollar-a-month helper, was seated on a rustic bench beside Alicia Fairleighbridge, and, horrors! his good right arm was round her waist and her head was pillowed on his shoulder in a most loverlike fashion!

Humph! My quaint little conceit of introducing our man Friday to a society bud seemed rapidly to be assuming the aspects of a dilemma with four horns and tassels on its ears. The awful import of their conversation, however, was what chilled the blood in my veins.

"Money is nothing," said Alicia. "All that matters is love, dear heart."

"But, little girl," he replied in saxophone tones, "you must understand that I am a nobody. 'Tis true that my father is Lord Leighton, a peer of England"—I pricked up a pair of breathless ears at that—"but," he continued sadly, "I am only a second son. And second sons are very small fry. My brother Dudley is heir to both title and estate."

"That doesn't matter either," she cooed.

"When father packed me off to America with a thousand pounds, to study cattle-ranching, I made up my mind that I would never ask him for another tuppence. Of course, I was cheated. I guess I'm not the first man that has fallen among thieves, though. Anyhow, when I landed in Valhalla I was flat. I went to work in a freight-house—"

"Poor boy," she sighed. "But even that doesn't matter now. We are going to be married, aren't we? You said you had arranged everything—"

"Yes," he said. "I've arranged everything, but I wanted to tell you all this before—not afterward. I wanted you to know, and then"

"And then I say that you are a foolish boy, and I am ready to marry you now, this minute, dearest!"

Ha! The plot was thickening indeed. But be it said that, in a pinch, our Bert was game—game to the death!

"Are you?" he cried. "You will marry me now, to-night?"

"I will," she said.

"Then let us go," he exclaimed.

And they went — without further palaver.

Honk singled me out with a wavering eye.

"We seem to be about to lose a perfectly good helper by matrimony," I ventured. "Do you think we ought to interfere before it's too late?"

"No," he said, after deliberation, "I believe she's worthy of him, after all."

We returned to the Medicine House. It wasn't very late, so we took chews and sat in our socks. Presently the telephone rang. Some one at the Palazzo wished to interview Honk. They wrangled briefly. Then Honk hung up.

"I suppose I'll have to chase up there," he said, reaching for his shoes. "I'll be back in a minute," he added at departure.

In something like an hour he returned —bearing weighty news.

"Gee!" he exclaimed excitedly, "whatchoothink? There's a small-like, little man up there! He's been trailing Bert all over four or five States. He's a solicitor from London! He says that Bert's father and brother are dead—killed in a motor accident!"

He paused. We stared at one another awesomely.

"Then Bert"— I whispered—"Bert is now Lord Leighton, isn't he?"

"Undoubtedly," said Honk solemnly. "No question of it."

Mrs. Fairleighbridge accepted the marriage of her daughter to an English earl with rare fortitude. She conceded that one must allow for youth and romantic notions, albeit they sometimes lead to foolish pranks, you know. Alicia and her lord visited at "The Pines" for a time.

That is all—no, by Jove, the count! Almost forgot the count.

In a day or two his niblets, Antoni Filippo Finola, having lost an heiress in the shuffle, decided to globe-trot onward. He was quite affable about it, and a number of the One Hundred came down to see him and his off on the afternoon train. Momma and Lady Leighton and Lord Bert among the others.

There was much lightsome prattle, quip, jollity, and laughter. And then fate, disguised as a construction train of some twenty flats covered with dreamy-eyed wops, pulled into a siding.

I noticed a sudden hush come into the count's artless conversation. Something unusual seemed to be happening among the sons of Italy on the flats. They were rubbering and chattering like monkeys at a peanut fiesta. Then, all at once, it began to rain dagoes. A hundred strong, they piled off and rushed, shrieking maledictions at Count Finola.

"Paganini! Kokomo! Ypsilanti!" they yelled.

There was a chorus of feminine squawks, some fluttering, considerable confusion, and then, out of the mix-up, shot the count in a puff of dust, running

By my halidome, but he *was* running, too! After him, in full cry, rolled the chase. But, la! they didn't catch him—not by hundreds of yards.

He was out of sight, down the right-of-way, in twenty seconds, leaving valet, trunks, friends, Romans, and countrymen far behind.

"Wh-what's the row?" asked Honk, as the work-train foreman elbowed his way forward.

The man exchanged a few spatters of jargon with those of his crowd who had remained within call.

"It's about th' guinea ye had with ye," he said finally. "Th' boys've been lookin' for 'im for months. Back East, it seems that he was a kind of treasurer for this bunch. He took care of their money for 'em as they saved it. An' he took that good care of it that he skidooed with the whole of it, d'ye mind!"

"Oh!" It was Mrs. Fairleighbridge who spoke. "There must be some mistake, good sir."

"Not on your life, ma'am," said the foreman. "Th' boys wouldn't make a mistake, not them. They know him."

A few of the count's former admirers required first aid for a minute, Mrs. F. particularly. But all recovered, Mrs. F. particularly. The dear lady leaned heavily on the strong arm of her English titled gentleman. He, at least, had been saved from the wreck.

Her gaze rested on Honk and me. A light of kindliness and forgiveness shone in each azure window of her soul and she smiled wanly.

"Ah—'m—rully," she said sweetly, "Mistah Simpson, and—both of you must call—soon!"

TURNING TO BAEDEKER'S "AMERICA."

TOURISTS are familiar with Baedeker's guides, the thick, red-covered volumes that can be slipped into the pocked of a coat. They contain in condensed form, descriptions of routes of travel and lists and prices of accommodations. In the guides to the countries of Europe considerable space is devoted to the history of each place and of the notable things it contains.

Until lately there has been no Baedeker for the United States, but one has at last been compiled, which puts America on the same plane as Europe as a country worth visiting. Tourists from abroad now go about turning over its seven hundred pages, thirty maps, and nearly fifty plans of cities. Seen through American eyes this "United States Baedeker," written from the German view-point, is very edifying

No effort made to decide the question of the relative comforts of European and American railroads, but Baedeker has this to say of our day coaches:

"A single crying infant annoys sixty to seventy persons instead of the few in one compartment; the passenger has little control over his window, as some one is sure to object if he opens it; the window opens upward instead of downward; the continual

opening and shutting of the doors, with the consequent drafts, are annoying; the incessant visitations of the train boy, with his books, candy, and other articles for sale, render a quiet nap almost impossible; while in the event of an accident there are only two exits for sixty people instead of six or eight. On the other hand, the liberty of moving about the car, or, in fact, from end to end of the train, and the amusement of watching one's fellow passengers greatly mitigate the tedium of a long journey; while the publicity prevents any risk of the crimes sometimes perpetrated in the separate compartments.

Another interesting detail is supplied by the reminder that "no alcoholic drinks are served while the train is passing through prohibition States (now somewhat numerous)." There is no information about the best way to approach the porter of the buffet-car and get what you want.

Baedeker also says that the traveler in the United States must rely on himself in boarding the proper train or car, and that therefore he should exercise great caution and ask questions. It is curious that the elaborate system which prevails in the great passenger-terminals and even in the stations of small cities should have thus been overlooked.

They do this differently in Germany. After the passengers have been placed inside the cars and the doors have been locked, the brass-bound station officials meet in solemn conclave for about ten minutes. They appear to be solving the most grave problems—like a meeting of monarchs. When they are through the train starts.

In this book on the United States the country is cut up into about one hundred and twenty different tours and routes to make a European holiday. Pedestrian tours are not recommended, it being stated that, except in the Adirondacks and White Mountains, walking trips are not much in vogue, owing to the scarcity of well-marked foot-paths. The "American language" is also discussed. We learn that we use a great many words and phrases in a way that is uncommon elsewhere. For instance: "Team—often applied to one horse."

The Baedeker guide-book is one of the institutions of Germany. There really is a man named Baedeker. He is the grandson of the Baedeker who founded the business at Leipsic in 1839. Baedeker now issues twenty-seven guides.

The original expense of preparing one of these guides is very heavy. They contain no advertising, so a volume does not pay for itself for almost ten years. After that it is almost clear profit. In compiling one of the books men are sent out as ordinary tourists to go over each route thoroughly and make an exhaustive study of everything a traveler ought to know. They test personally the different hotels and give each a cold, impartial rating. Each first-class place is marked with an asterisk. The professional pathfinders verify the plans of cities, pay special attention to scenic points and other places of interest.

They are so accurate that if a tourist discovers an error, which is rare, he is likely to believe that the scenery has been shifted since the book was printed, not that the book is wrong. A number of Baedeker's experts tour Europe continually, checking up changes to keep the books up-to-date. The books are never electrotyped, but remain standing in movable type so that changes can be made at a moment's notice.

THE LITTLE THINGS.

BY ED. E. SHEASGREEN.

ONLY a tiny set-screw
Is loose in the main-rod key;
Yet what a terrible pounding
Comes throbbing up to me.

Only a flange that's broken—
An inch and a half of steel—
Yet a score of men are dying
Because of this broken wheel.

Only a misread letter
In the order in our hand—
"A wreck!" the message flashes
In lightning o'er the land!

And so, on life's great railroad,
My brother, you and I
Hold places of importance
Scarce seen by the human eye

MAKING OCEAN TRAVEL SAFE.

BY PEARSON MacINTOSH.

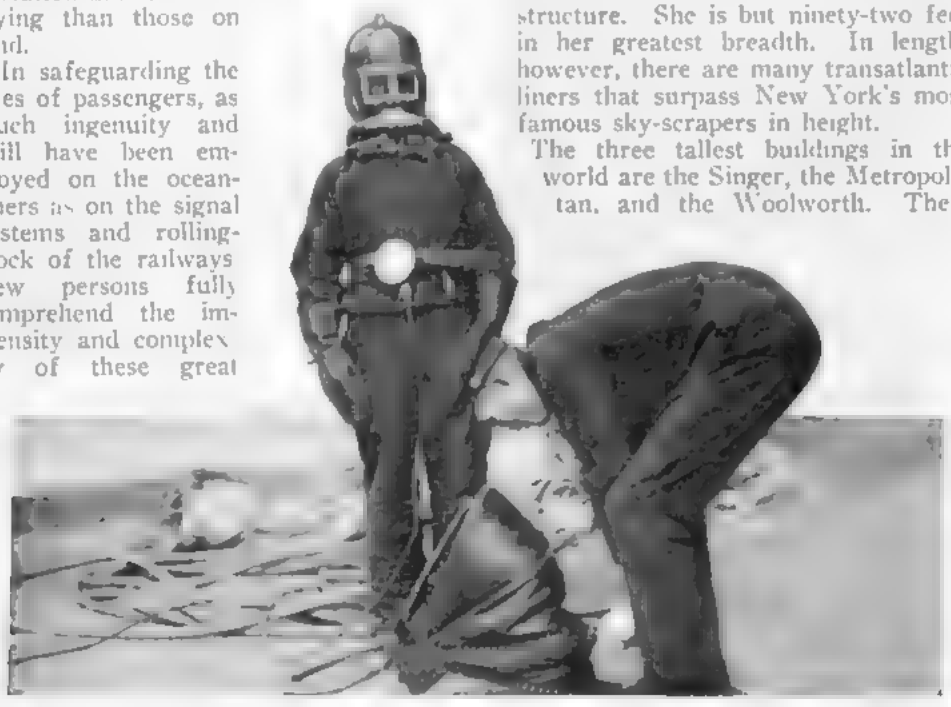
The photographs illustrating this article were specially taken for the RAILROAD MEN'S MAGAZINE *by Brown Brothers, New York*

A FLEET of nearly one hundred huge passenger-steamers crosses the Atlantic. In size, speed, safety, and luxury these ships surpass anything that was anticipated a quarter of a century ago. They run as close to their schedules as trains to their time-tables, although the problems of ocean transportation are far more trying than those on land.

In safeguarding the lives of passengers, as much ingenuity and skill have been employed on the ocean-liners as on the signal systems and rolling-stock of the railways. Few persons fully comprehend the immensity and complexity of these great steamers. They have been called the sky-scrapers and hotels of the sea, yet they are far more wonderful than the steel mountains and massive hostelries of Manhattan Island.

The mighty ocean-liner is not of remarkable height and breadth when compared with a big building. The Olympic is only 105½ feet from the bottom of her keel to the top of her pilot-house, less than the elevation of a ten-story structure. She is but ninety-two feet in her greatest breadth. In length, however, there are many transatlantic liners that surpass New York's most famous sky-scrapers in height.

The three tallest buildings in the world are the Singer, the Metropolitan, and the Woolworth. Their

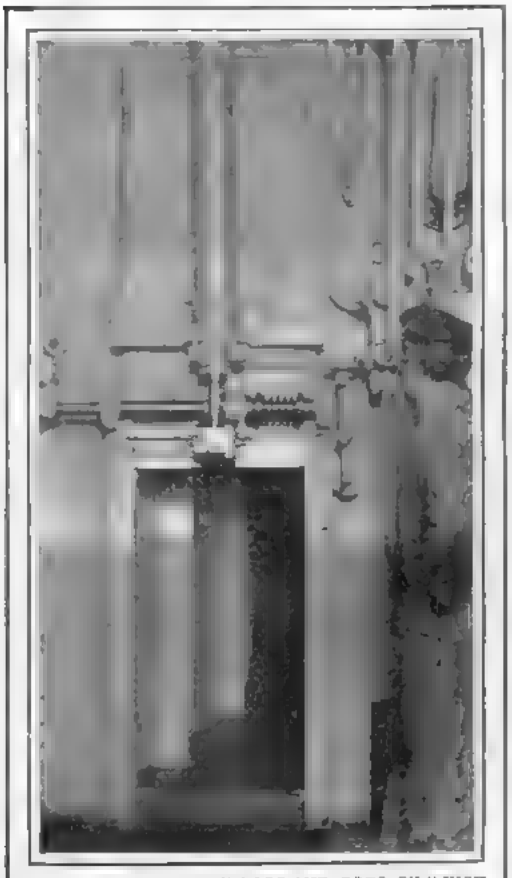


THE UNIFORM AND OXYGEN HOOD WORN BY SAILORS WHEN FIGHTING FIRE IN THE HOLD OF AN OCEAN STEAMSHIP. FROM THE HOOD A LONG HOSE EXTENDS TO A BELLOWS ON DECK WHICH SUPPLIES AIR TO THE SAILOR. FASTENED AT THE WAIST IS AN ELECTRIC SEARCHLIGHT BY WHICH HE IS ENABLED TO DIRECT STREAMS OF WATER EFFECTIVELY AND FIND HIS WAY ABOUT

heights, from pavement to pinnacle, are respectively 612, 700, and 750 feet. There are twenty-three ocean-liners sailing regularly from New York that are between 615 and 685 feet in length. There are nine between 700 and 726 feet long. There are five between 790 and 919 feet in length.

The hugest of these marine wonders is the Imperator of the Hamburg-American line. But the Imperator's 919 feet will be surpassed by the 950 feet of the Imperator II and by the huge boats that are now being built by other lines. The 1,000-foot boat will be a reality sooner than the 1,000-foot sky-scraper.

To any one who is not familiar with the dimensions of steamships and sky-scrapers it would seem impossible, gazing upward to the top of the Woolworth Building, that any ship if stood on end would reach so far into the heavens. It staggers one to realize that the new big Hamburg-American liner would out-top the world's tallest building by no less than 169 feet. About sixteen stories would have to be added to the Woolworth Building.



COMPRESSED-AIR CYLINDERS AND RODS BY WHICH THE DOORS AND WATER-TIGHT COMPARTMENTS ARE AUTOMATICALLY CLOSED AND HELD IN POSITION. THESE CYLINDERS ARE OPERATED DIRECT FROM THE CAPTAIN'S CABIN.

Where Danger Lurks.

Mere bulk is not the wonderful feature of the sky-scrapers of the sea. The devices for securing safety are among the most remarkable. The dangers of the sea still exist. Only by skill and watchfulness and many intricate inventions, the fruit of necessity and of long experience, have these dangers been mastered for the most part. To-day the probabilities of disaster are less than they ever have been.

The seaman's first task on leaving port is to sail a true course to his destination. The water is a vastly superior road-bed to any ever constructed by man. There are no misplaced switches, no unsafe bridges, no broken rails. The perils lie chiefly in what the ship may meet in the dark or the fog. The other principal dangers are internal, such as a broken shaft, a bursting boiler, or fire.

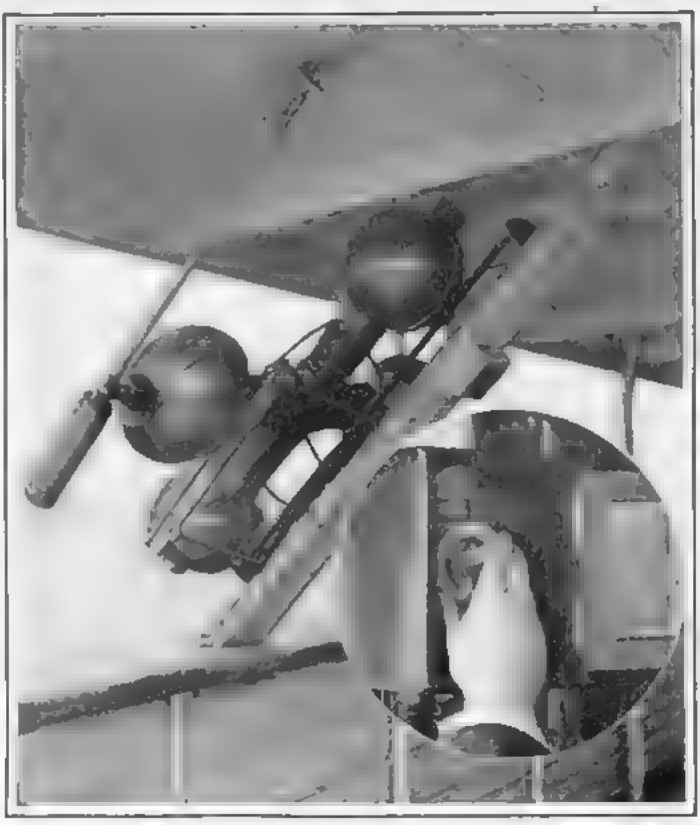
Storms have lost much of their former terror to mariners through our better knowledge of atmospheric circulation. Last winter, voyage after voyage, the big transatlantic boats reported the heaviest weather of their seafaring. Yet every ship reached its haven with but little delay.

The steamship must have a locomotive mechanism enabling her to reach her destination safely and without assistance, even if one or another part of this mechanism is damaged or destroyed. In engines and boilers the modern steamship does not put all its eggs in one basket. There may be a dozen boilers, or a score, but they are all constructed and placed for safety and an equable distribution of strain. There is always a battery or two of boilers in reserve in case of accident.

All the boilers are tested at frequent intervals, as is the rest of the machinery, so that any sudden failure may be guarded against as much as

possible. The steam-pressure is regulated automatically by safety-valves. Both engines and boilers are divided into several independent sets. So long as one of them continues to work the ship can continue the voyage.

The principal function of this mass of machinery is to drive the huge boat through the water at high speed by means of propellers. The indicated horse-power on the biggest ships is 70,000, as much power as is required to turn the wheels of all the manufacturing plants and street railroads of a city the size of Rochester, New York, with nearly a quarter of a million inhabitants



LIFE-SAVING RAFT FOR USE AT NIGHT (LARGE PICTURE) THIS RAFT IS SO CONSTRUCTED THAT AS SOON AS IT IS RELEASED AND HITS THE WATER A LIGHT IS AUTOMATICALLY IGNITED WHICH BURNS FOR SEVERAL HOURS AND REVEALS ITS POSITION TO THOSE IN THE WATER BY TURNING THE SMALL WHEEL SHOWN IN THE CIRCLE LIFE-BELTS ARE AUTOMATICALLY THROWN INTO THE SEA FROM DIFFERENT PARTS OF THE SHIP

Each crank-shaft of steel weighs over a hundred tons, and one solid manganese bronze propeller weighs over twenty tons. The twin-screw system of propulsion, which was introduced on the transatlantic liners thirty years ago, has been much improved. Up-to-date steamers now have four propellers, operated by four independent sets of engines and shafting. These propellers have played an important part in bringing a rudderless ship safely to port, even when the accident has occurred in mid ocean in a terrific storm.

The rudder is one of the few parts of a ship that cannot be replaced at sea in case of damage. The rudder of the Olympic or the Mauretania weighs about a hundred tons. It is of forged steel or wrought iron. Not many years ago these big rudders were made of cast steel, but now nothing but the toughest and most tenacious of metals will answer

The nerve center of a steamship is the bridge or wheel-house. On the biggest of these ocean leviathans are a commodore and three staff captains, one of whom is always on the bridge.

The Mauretania holds the record of four days, ten hours, and forty-one minutes from Queenstown to New York. It is 142 miles from New York to Albany, and the swift excursion steamers take between nine and ten hours for the journey. At twenty-five knots an hour —a knot is 1.151 land miles—the fleet Cunarder would traverse the distance in less than five hours. It requires from

twenty to twenty-eight hours to travel by rail from New York to Chicago. One of these swift ships will traverse the same distance in thirty hours. San Francisco could be reached from New York in about 4½ days.

In the Wheel-House.

Everything radiates from the bridge. Within its comparatively small space there are innumerable antidotes for danger—the indicators, compasses, steering apparatus, telephones — in fact, everything that the human brain has devised for the navigation of a ship. So complete in detail is the wheel-house on one of the North German Lloyd boats, for instance, that in a brass-covered box are miniature electric lights, so arranged that the officer on watch at night may see instantly if his top lights or his port and starboard lights are burning.

From the bridge and wheel-house the ship's officers are in complete control of all the vast network of mechanism that brings them accurate record of everything that is occurring throughout the ship. By these means they may transmit their orders to the remotest parts of the boat with a certainty that they are both understood and fulfilled. If Paris is France, then even more truly it may be said that the bridge is the ship.

What would happen if a giant wave should tear away the wheel-house and its apparatus? Such a thing has not actually happened, but if it did, the direction of the ship would be transferred to one of the two reserve wheel-houses aft, which are duplicates in every detail of the one forward. If both these reserve wheel-houses should be damaged, the same apparatus would be found on the decks below. On the modern steamship everything is in multiples of two or more.

Broadly speaking, the instruments of control found on the bridge of a great liner fall under two heads; those whose operation is mechanical and those in which electrical power is used. In the first of these classes is the marine telegraph, the engine-room telegraph, and the steering telegraph.

You have to obtain permission to visit the bridge of a big vessel. It is easier to procure the consent of the division superintendent of a railroad to ride in the cab with the engineer than it is to have access to the bridge, even when the boat is lying at her dock.

You first notice, in this jealously guarded enclosure, several thick brass posts about three feet high, bearing ground-glass dials at the top. The faces of these dials are divided into sections by lines of colored glass. Each section of the dial shows an order in blue or red letters, varying according to the chosen phraseology of the particular line, but usually arranged in a series, such as full speed, half speed, slow, stop, reverse, and go ahead.

These orders either cover the entire face of the dial or are so divided that all orders may be repeated, one side applying to forward and the other to backward movement. Above the dial is a brass handle connected with a pointer or indicator. Another short pointer is attached to the dial's center, like the hour-hand of a clock.

This is the visible part of the engine-room telegraph. Various ships employ it in various forms. On most large vessels there is a dial on each side of the bridge, one of which applies only to the starboard engines and the other to the port, while a central dial, with faces both fore and aft, transmits signals which apply to both sets of engines. Down in the engine-room of the vessel there is an exactly similar set of dials, so that any order from the bridge may be instantly seen.

How the Steering Engines Work.

When the captain sets the needle, or indicator, on his starboard dial at "half speed," for instance, the needle on the engine-room dial swings to the same position. The engineer answering the signal sets a pointer to the order indicated, and at once the short central hand on the bridge dial swings into place, showing the officer in command that his order has been understood. In the engine-room a large gong also sounds the signals as a matter of additional precaution and to attract attention.

In most vessels this is accomplished by means of direct mechanical connection of protected wires and chains. In the British admiralty system it is shafts

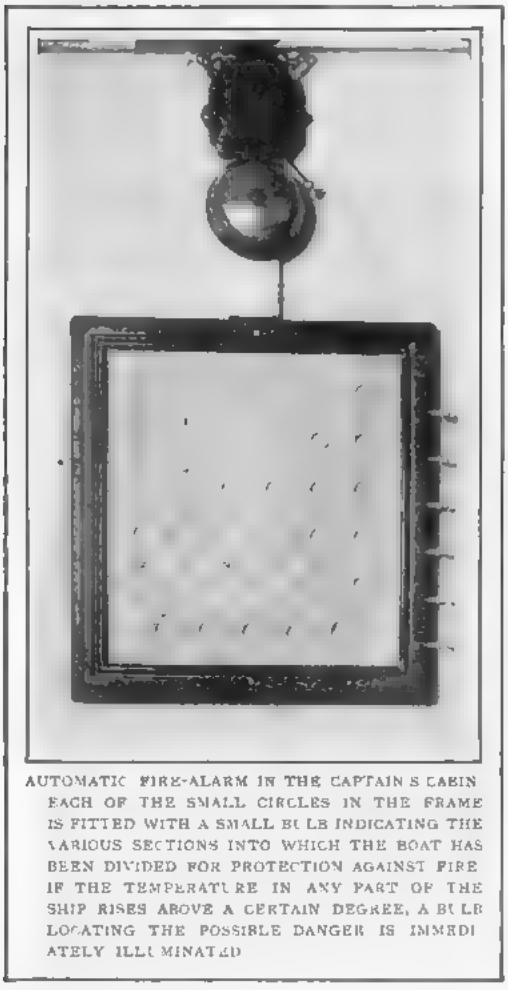
and gearing. But the principle is always the same.

For the safe handling of a large ship the absolute reliability of everything connected with the steering apparatus is

THE ENGINE-ROOM OF THE THIRTY-TWO THOUSAND TON STEAMER, LUSITANIA. EVERY ORDER GOVERNING THE HUGE VESSEL IS REGISTERED ON THE DISK INDICATED BY AN ARROW. THESE ORDERS ARE ELECTRICALLY TRANSMITTED FROM THE BRIDGE.

required above all things. The huge rudder is swung to and fro by a steering-engine. This engine has the quality of parrying, as it were, and reducing the shocks of the rough sea. Besides the main steering engine there are one or two auxiliary steering-engines. If all steering telegraphs are of the same design as the engine-room telegraphs, but they bear a different set of

orders on their dials. In order that the helmsman may at any time ascertain the position of the rudder, an electric steering indicator is placed in front of his wheel. The rudder must follow the indications of the wheel without the slightest deviation



AUTOMATIC FIRE-ALARM IN THE CAPTAIN'S CABIN. EACH OF THE SMALL CIRCLES IN THE FRAME IS FITTED WITH A SMALL BULB INDICATING THE VARIOUS SECTIONS INTO WHICH THE BOAT HAS BEEN DIVIDED FOR PROTECTION AGAINST FIRE. IF THE TEMPERATURE IN ANY PART OF THE SHIP RISES ABOVE A CERTAIN DEGREE, A BULB LOCATING THE POSSIBLE DANGER IS IMMEDIATELY ILLUMINATED.

Steam steering-gear is one of the modern safeguards. In the old days six and even eight men tugged and strained at a wheel in bad weather. Under the new system the rudder, weighing many thousands of pounds and located hundreds of feet from the wheel-house, swings to the lightest touch of the quartermaster, who is always at the navigating officer's elbow so that he may receive his orders.

The Navigating Telephones.

The wheel turned by the quartermaster merely governs the steam steering-engine, far aft, which in turn moves the great rudder. It is estimated that the pressure exerted by the water in turning the rudder from starboard to port of the Kaiser Wilhelm II, at a speed of twenty-three knots, is equal to about 80,000 pounds.

The navigating telephones form another important part of the "interior independent communicating system" of the big ship. They are connected with every part of the vessel, from the crow's nest to the depths of the hull. They are independent of all other telephones, for the big ship has as intricate a telephone system as a huge hotel. The navigating telephones are operated from a separate power-station. If this fails, there are the storage batteries.

The navigating telephones are "loud speaking." The ordinary kind in use below decks would be of little use where the noise of wind and sea is sometimes tremendous. These special instruments have headpieces, so that the receivers are held closely to both ears. If the telephone-system should become disabled, a set of speaking-tubes is ready for instant use. From the crow's nest to the bridge run alarm-bell wires, which can be used in addition to the telephone.

Always Ready for Fire.

All about the bridge are brightly polished dials, thermometers, barometers, levers, thermostats, and cabinets containing a number of small switches. Fire is one of the greatest mishaps that can befall a vessel. The electric light has lessened this danger materially over the days of the oil-lamp. Spontaneous combustion in the coal bunkers of the ship is always dreaded, and is guarded against as much as possible.

The ventilation of the bunkers is a matter of great importance. The highly combustible carburetted hydrogen which is generated by the vast quantities of coal is exhausted by means of powerful ventilators, and fresh air is withheld from the bunkers to prevent the coal from igniting itself. Thermostats are placed all over the ship and are connected electrically with a box on the bridge.

This box is in a frame filled with little squares, like an indicator in a hotel. The instant the temperature of any part of the ship rises beyond a certain point a bell rings loudly and a red light flashes

in the square that corresponds with the location of the thermostat. The location of the fire is known instantly

As absolute safety against fire cannot be guaranteed, it is necessary to extinguish it as soon as it is discovered. Besides the ordinary hydrant and hose system with steam and hand-pumps there is a steam fire-extinguishing plant. If the fire is deep down in the hold, even water and steam may fail, so the great passenger ships are equipped with an apparatus for generating a gas which possesses great extinguishing powers It will smother any blaze that is in a confined space.

Still another precaution against the spreading of fire in a ship are the fire bulkheads, iron walls that are placed athwartship at regular intervals

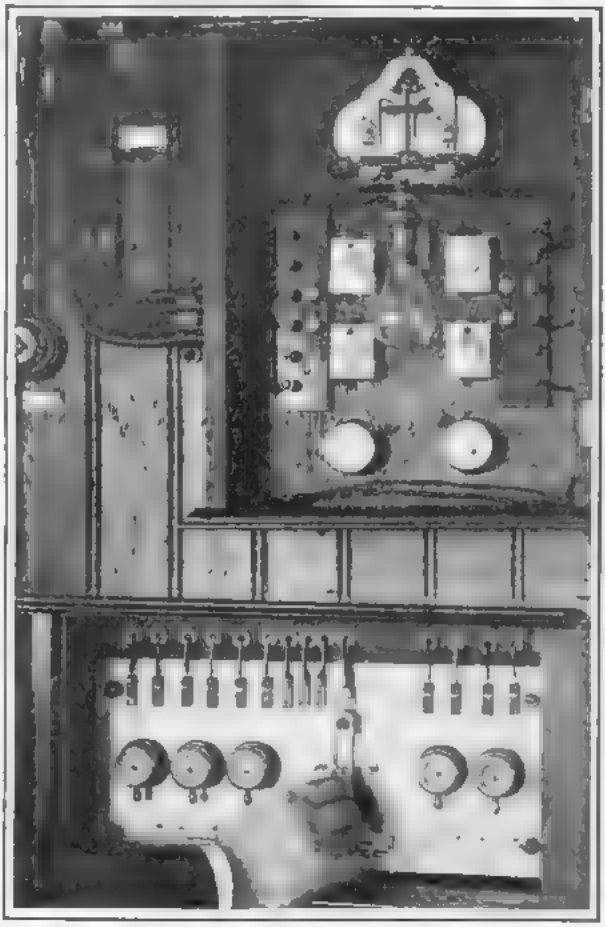
Since the Titanic disaster more attention has been paid to the "double skin" of the big boats and to the water tight bulkheads and doors. The newest boats have what might be called one hull inside the other extending nearly their entire length The space inside is divided by powerfully constructed bulkheads running both crosswise and lengthwise from the bottom of the ship to far above the water-line. The space between the bottoms is also bulkheaded.

Imperator Well-Equipped.

The new Imperator has thirty-five of these watertight compartments, the closing of which is under direct control from the bridge. These bulkheads are now much stronger than they used to be, and the facility with which their doors can be shut in an emergency has been improved. Such things as these are vital in the "unsinkable ship."

The control of the bulkhead doors is located on the bridge. It is called the emergency switch, and is so placed that the navigating officer can reach it without a second's delay. The operation of the emergency switch is electric, but the actual closing of the ponderous doors is effected by hydraulic pressure.

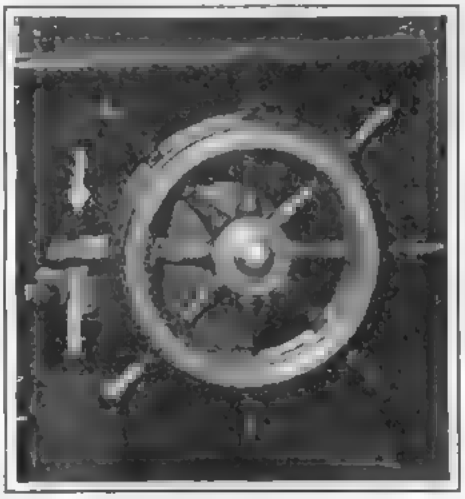
The pipe-line for this purpose runs the entire length of the vessel. It is connected with an accumulator charged with compressed-air, water, and glycerin at a pressure of 800 pounds to the square inch. A pump automatically maintains this pressure, and there are cylinders with enclosed pistons beside each bulk-



BY THE CLOCK WORK SHOWN AT THE TOP OF THE PHOTOGRAPH ALL FOG SIGNALS ARE AUTOMATICALLY CONTROLLED AND SOUNDED THE SIGNALS ARE REGULATED BY SMALL DISKS JUST ABOVE THE LABELS OR INDICATORS AND ARE BROUGHT INTO ACTION BY THE ELEVATION OF THE SWITCH ON WHICH THE MAN'S HAND IS RESTING

head door. By simple gearing these cylinders transmit the pressure closing the doors

As soon as the officer on the bridge swings the emergency-lever, gongs begin to ring. They sound their alarm for five seconds to give notice to the engineering force that is scattered through the lower part of the great ship. Then the great steel doors, each weighing more than a thousand pounds, begin to descend. So great is the force behind them that they cleave everything in their path, even forcing their way through beams of solid wood



THE ARROW POINTS TO THE APPARATUS USED ON THE KRONPRINZESSIN CECILE FOR CLOSING THE WATER-TIGHT DOORS ONE TURN OF THE WHEEL IGNITES A RED LIGHT IN EVERY BULKHEAD WHICH STAYS LIGHTED FOR SEVENTY SECONDS. EVERYBODY IS SUPPOSED TO GET OUT IN THAT TIME, BECAUSE THE DOORS CLOSE TIGHT BY HYDRAULIC PRESSURE WHEN THE SEVENTY SECONDS ARE OVER

Thus it is that these doors can be closed despite the tremendous pressure of the inrushing water. If the hydraulic plant for closing the bulkhead doors should fail, they could be shut by hand from stations on the upper deck. As each door is shut a red light flashes on the square in the diagram in the wheelhouse that shows its location

To provide means for the escape of any persons caught on the wrong side of the bulkhead doors there is, beside each of them, an "at will" switch. By this the lock of the door may be released temporarily, and it can be opened long enough for a person to pass through and then shut again.

The submarine signaling apparatus is another modern device for safety Approaching a coast at night in fair weather, the captain of a ship moves with a feeling of perfect security. From his chronometer and compass and his observations he knows his position, and the signal lights give him corroborative evidence. But in fog or snow the lights are blotted out and the voice of the lightship or lighthouse siren is elusive and valueless for guidance. Then it is that the sound of the submarine bell is heard with the keenest attention

The submarine bell is not carried by the steamer, but hangs submerged at a depth of about twenty-five feet from the side of each lightship on some dangerous shoal, or from a buoy. It is struck by pneumatic machinery at varying intervals, in accordance with an established signal-code which denotes the location of each bell.

Water transmits sound without deflection. The bell may be distinctly heard at a normal distance of eight, ten, and even fifteen miles The receiving apparatus is attached to the hull of the steamship. It is a small boxlike affair similar to the early receivers on the telephone. From these two boxes, one on each side of the ship, insulated wires run to the bridge and, after passing through a dial, end in a telephone earpiece. On the dial are the words "port" and "starboard."

If the sounds of the bell are coming from the port side, they may be heard only when the switch of the dial is turned to port, and *vice versa*. By means of a microphone on the receiver the intensity of the sound is greatly magnified The churning of a vessel's screw may be heard at a distance of several miles. The clearness and intensity of the sound enables the officer on the bridge to judge on which side the bell lies. When the note comes with equal distinctness from both port and starboard, the bell is dead ahead.

A safety device warns ships of approaching icebergs in foggy weather or at night. A sensitive thermometer above and below the water line records sudden

drops in temperature and rings a bell on the bridge to give warning. A clock-work arrangement on the bridge blows the whistles of the steamer at regular intervals of seven seconds during a fog. The time elapsing between the sounding of the whistle may be regulated at will. There are switches for the various calls, for engineers, for firemen, for stewards, or for sailors.

There is a small wheel enclosed in a mahogany box. Directly above it is an electric globe. When the cry of "Man overboard!" is heard, the watch officer turns this small wheel once. Instantly several life-rings are released from the side of the ship and drop into the water. As soon as they are clear of the ship the light in the globe shines red.

The life-rings are equipped with a tube containing a chemical. When the tube comes in contact with the water a bright flame is produced. This will burn for an hour or more and is visible at night a distance of eight or ten miles. The man overboard swims to one of these lights and grasps the buoy. As soon as possible a boat is lowered from the steamer and the buoys are picked up.

On the bridge are the great compasses and ship's chronometers on which so much depend. Devices show the number of revolutions the propellers are making, and a contrivance, called the commutator, indicates the list of the ship.

Probably the wireless has added more to the safety of the sea than any other device. Nowadays, on the biggest boats especially, there are two operators at the wireless-key day and night. The wireless-telegraph is as important to transatlantic steamships as the block signal system is to railroads.

From two to a dozen big boats leave New York every day. Each has a well-defined course. Often the steamships of the different lines are separated from one another by only a few miles or hours. On the wall of the wireless house is a rectangular chart crossed and recrossed by many black lines. From one side to the other runs a broader line in red ink. On the margin of the chart are marked the days of the week. It is the wireless guide for the current month.

The red line gives the course of the steamer, while the black lines crossing it indicate to the operator at what hour each day he is likely to pick up the wireless messages of other ships. Yet, powerful and efficient as this device is, it is still almost impossible to tell exactly from what direction a message comes.

The dynamos that supply power for the wireless, under ordinary conditions, are those which furnish light for the ship. There are several sets, of course, and each of them is in a separate water-tight compartment. The engines and boilers that drive them are as completely cut off from one another by water-tight bulkheads as if they were in different ships.

Even this is not considered enough. Still further provision is made to secure safety. These engines and dynamos might be disabled, so there is an auxiliary power-plant that can be put in use at short notice. The final reserve on which the wireless can fall back is two complete sets of storage batteries, or accumulators, in the wireless-house. Each has sufficient power to work the wireless system for twenty continuous hours.

The wireless goes hand in hand with the submarine bell in navigating in bad weather. This was demonstrated some years ago. The Kaiser Wilhelm II, eastbound, was caught in a dense fog. It was unable to pick up the signals from the Lizard, but the passengers and mails were landed at Plymouth with little difficulty.

"There was a heavy fog on approaching the Channel," says Captain Cueppers, "and we could not sight the Scilly Islands or Wolf Rock. No fog signals were audible. The Marconi station on the Lizard answered my wireless inquiry, saying that our steam-whistle had been heard two or three points to the south. I then notified the station that I would blow the whistle three times.

"I did so, and the Lizard 'wirelessed' in reply that the signals had been plainly heard abeam. I therefore held toward Eddystone and notified the agents in Plymouth to have the tenders wait for us outside the port.

"In the afternoon the tenders found their way out to us through the murk. We landed passengers, mail, and baggage and continued on our way to Cherbourg without ever having seen Plymouth."

THE LEADERS OF THE GREAT

MARTIN F. RYAN PRESIDENT OF THE BROTHERHOOD OF RAILWAY CARMEN

Painted by S. G. Cahan from a photograph

MRS. MARIE R. RONEMUS PRESIDENT OF THE LADIES' AUXILIARY

Painted by S. G. Cahan from a photograph

THE Brotherhood of Railway Carmen is a unique organization of railroad workers. It represents the interests of men engaged in almost sixty diverse occupations. The executive of such an order must be a man of wide experience and sympathy—of extensive knowledge of the various activities of the men whose welfare as their leader, he must protect. Such is the responsibility of Martin F. Ryan, president of the carmen, and his career indicates that he is well qualified by intimate contact with the many kinds of work the rank and file perform.

Mr. Ryan was born in Coldwater, West Virginia, on October 23, 1875, and at an early age he went to Fort Worth, Texas, where he entered the service of the Houston and Texas Central Railroad. He began in the car department, and his connection with the carmen's order began immediately upon his becoming eligible to membership. He entered the ranks as a member of Fort Worth Lodge, No. 23. Until 1902 he remained in the service of the same road, and during that period he served in practically all the responsible positions in the car department. It was here that he gained the broad knowledge of a carmen's work that later fitted him for the presidency of the order. From the Texas Central he went to the Atchison, Topeka, and Santa Fe at Beaumont. He soon realized that protective measures were necessary for the men on that road, and he was a member of the first general committee to secure from the company a very necessary increase in wages and improvement of working conditions.

At the eighth biennial convention of the order at St. Louis in 1903, he represented his lodge as a delegate and was elected a member of the general executive committee. In this capacity he undertook the extensive organization of lodges, and guided a number of movements for better wages and conditions in the car departments of many roads. His fair yet unyielding procedure not only brought him success in his frequent attempts, but gained great favor with the men who were so favorably affected. In 1905 the order showed the

RAILWAY ORDERS OF AMERICA.

OF RAILWAY CARMEN.

quality of its appreciation by electing him first general vice president. The fine conduct of his office during the next four years—four years marked by splendid

MRS. EFFICE DEACON, SECRETARY-TREASURER OF THE AUXILIARY

Painted by S. G. Cahan from a photograph.

growth in the order stamped him as a man fit for the presidency. At the eleventh biennial convention, held at Atlanta, Georgia, in September, 1909, he was chosen leader of the carmen, and has rendered fine service in that capacity ever since. His administration has brought him into relations with most of the leading railroad officials of America, and has made him prominent among the leaders of railroad men. The carmen have grown to a fine numerical and financial strength under his purposeful direction.

A society with over 40,000 members entails a bewildering amount of secretarial supervision, as well as the intelligent guidance that brings enthusiasm and growth. This supervision is the work of E. William Weeks, secretary and treasurer of the railway carmen's order. Mr. Weeks is an un-

E. WILLIAM WEEKS, SECRETARY-TREASURER OF THE RAILWAY CARMEN

Photograph by Studebaker, Kansas City.

tiring worker for the welfare of his comrades—no opportunity to do something for their organization presents difficulties too great for him to confront. He was born in England in 1873, but emigrated to western Canada when a boy. Being attracted by the romance and adventure of railroading in that period, he obtained a place on the Canadian Pacific Railroad.

The affairs of the railroad worker were then in a process of rapid evolution. The individuals were uniting for mutual protection—the railway order had become a useful instrument for men's rights, and Mr. Weeks was one of the thousands who sensed the fine meaning of brotherhood. He joined the carmen's order because he believed firmly in its purpose. His membership began in Jubilee Lodge, No. 6, in Winnepeg, Canada, in 1901, which lodge is now the largest in the brotherhood. He represented his lodge as a delegate to the Buffalo convention of 1905, where he was appointed a member of the resolutions committee.

He worked untiringly for arbitration as opposed to violence in labor disputes. His attitude was one of firmness for the rights

of the men, but for intelligence rather than force in obtaining an end. Mr. Weeks's movement for arbitration was successful. Two years later he was appointed secretary to the committee on laws, and at the same convention, in Chicago, he was elected general secretary and treasurer of the order, and has since served as such.

Mrs. Marie R. Ronemus, president of the Loyal Star, the ladies' auxiliary of the carmen's brotherhood, has filled that office ever since she did so much to organize the auxiliary in Kansas City, on September 13, 1901. A small meeting assembled at her home on that day and the auxiliary came into existence. It was officially ratified by the men on the following day. Her husband, W. H. Ronemus, who practically brought about the organization of the brotherhood proper, is probably the biggest figure in its history. In the critical period of the late nineties it was only his incessant sacrifice that kept the order alive.

Mrs. Effice Deacon, the secretary and treasurer of the Loyal Star, was elected to her office at the Chicago convention of 1907. Her husband was a member of the first carmen's lodge ever formed. She has been connected with the auxiliary since its beginning.

FREIGHT-TRAIN COLLIDES WITH STEAMBOAT.

FOR a railway train to collide with a steamboat, both train and steamer remaining on their natural element, is an extraordinary event, yet such a collision was a feature of the floods that devastated the Ohio Valley during the early spring.

The St. Louis *Republic*, describing the accident, says:

"A railroad train and a steamboat collided head-on at Cumberland City. The wreck, probably the most remarkable on record, was primarily caused by the flood, and secondarily by the confusion of signals between the two carriers. The railroad locomotive plowed into the starboard side of the steamer, and travel by both rail and water became suspended at that point.

"During the recent flood that inundated the Ohio Valley the Cumberland River has been on its biggest boom in many years. The small steamer Lochie S., wheezing across the lowlands and far from the usual river channel, meandered across the Louisville and Nashville Railroad tracks. The rails were four feet under water, and the Lochie S.'s draft gave her plenty of sea room.

"The railroad, in safeguarding against traffic hold ups by floods, has special engines with high fire-boxes that can plow through high water. And so it came to pass that the Lochie S. was just in time to meet a freight-train.

"The boat crew sighted the train. Then began a series of short, sharp blasts from the steamer's whistle. Interpreted under the river code, they meant full speed astern. But the freight engineer didn't know, and in the dark he didn't see the steamer on the right-of-way. There was a grinding crash and the engine's cowcatcher was buried in the boat's side.

"Small boats were summoned to the rescue and towed the steamer to a landing. The train proceeded on its way. No one was hurt. But the Supreme Court probably has gained some interesting questions to pass on along the lines of 'When is a river not a river?'"

STILL NAVIGATE WITHOUT COMPASS.

THE French sea captains who bring their vessels across the Atlantic every spring to fish on the Newfoundland Banks navigate almost exactly as they did in the days of Columbus. Of the 280 French sailing vessels on the Banks last year 240 were fitted out in Normandy and Brittany. Their captains found their way across the trackless wastes of the ocean without difficulty. They take observations for latitude, but they have no chronometers and are unable to tell their longitude except by guesswork, says the New York *World*. On the westward voyage they can tell by soundings when they arrive on the Banks. On the return voyage in the fall they roughly estimate their position when they cross the lanes of the transatlantic liners converging toward the English Channel. In spite of this primitive navigation these skippers reach port in safety year after year. There are about 7,500 men engaged in this fishery. They leave France in March and the voyage takes from fourteen to forty-five days, according to the weather. They return in the fall, and their total earnings for the seven months average not more than $150.

HELP FOR MEN WHO HELP THEMSELVES—No. 48.

Thaddeus S. Dayton Tells of the Severe Examinations You Must Pass to Enter the Railway Mail Service, and How to Attain Success IF You Get into the Service.

As Long as a Man Is in the Service He Must Study Constantly, Because the United States Post-Office Is the Most Systematic Business in the World.

THADDEUS S. DAYTON.

THE railway mail-service is the very heart of our postal system. Much of the efficiency of the Post Office Department is due to the work that is done on the trains. The railway mail-clerk is on the firing line. His wages are higher than they were ten years ago. The latest increase went into effect last year. The army of clerks is growing rapidly. In 1899 there were 8,100 in the railway division; to-day there are more than 18,000.

Three thousand dollars a year is the limit in the railway branch of the service. There is no pension from the government, after long years of service, but this will come eventually. A movement is now afoot to reward the veterans of the railway mail by appointing them second or third-class postmasters, thus turning their experience to valuable account.

The most picturesque phase of a railway mail department's work occurs between midnight and morning. During this interval passenger service has fallen to a minimum, but the mails are intensely alive. Great numbers of pouches have been delivered to the post-office by wagons and carriers; pneumatic tubes have conveyed tons of mail-matter to distributing points, and the vast accumulation of a day awaits the clerk's attention.

In the large general post-offices and important branches the flood of mail is deposited on long tables, where it is immediately faced—that is, placed with the stamped side up. It is then fed into electric cancelers, which automatically, and at a very high speed, imprint the necessary postmarks and render the stamp worthless for further use.

Over swiftly moving belts, or carriers, the mail then flows rapidly to the distributing-room, in which a large body of clerks sort it with remarkable agility and accuracy. It is a keen fight against time, for every second is valuable

Standing before the semicircular frames from which the sacks are suspended, open-mouthed, the men, with nimble fingers, make the first classification. This includes matter intended for the Pacific coast and for foreign post-offices, for it is not necessary to classify it as closely as interstate mail. In other rooms, under the green light of the mercury-vapor lamps, hundreds of sacks are being filled for States, groups of States, counties, and cities.

At the railroad terminal stands a long, black train. Its lighted windows are few and small formidable and fortresslike the steel cars appear. The locomotive couples on with hardly a jar. The last of the wagons dashes up, and a load of grimy sacks is thrown into a car. Between two and three o'clock in the morning, two cars in the train carry nothing but newspapers. All over the

country hundreds of such trains rush back and forth in the thrilling conquest of time and distance. If they did not, the pulse of commerce would lag and the arteries of business would clog.

As soon as the cars are made up into trains in the terminal, crews of mail-clerks take possession The first avalanche of mail-sacks soon descends upon them. In a mail-car little space is wasted. A narrow aisle runs the full length. Along this are mail sacks to be filled. Against the side walls are hundreds of pigeonholes and compartments used in sorting.

There has not been time for more than a rough-division at the post-office. The letters for city delivery have been taken out, and those outgoing have been classified so that they will reach the proper train. When the pouches first come to the car their contents are "dumped up," as it is called, on shelflike tables that will hold a pouchful apiece. Some pouches are filled with loose mail. This has to be faced before it is distributed. Then the real work of sorting begins.

Post-Office List His Alphabet.

This requires the skill of long experience. The United States is divided into a vast number of "territories" for postal purposes. The railway mail-clerks must know the post-offices in their territory as they know the alphabet. They must know exactly what route will reach a given point in the least time. If an accident disarranges any portion of their system, they must be able to decide quickly how the mail can be rerouted to save the most time.

In acquiring this knowledge they are quite like musicians, who continually study new and more difficult compositions Their work is almost endless in that respect. The railway mail-clerk's memory, within its scope, must be practically flawless. It must be automatic. In tossing letters to the right boxes across the car or into the mail-sacks he becomes an expert.

It sounds incredibly difficult. It is enough to discourage any one who thinks of entering the railway mail-service, but the faint-hearted should remember that there are more than 18,000 men who have mastered these difficulties. The postal service, outside postmaster appointments, is under civil-service rules. In the railway mail-service a strict physical as well as mental examination is required, because the work there depends on quickness of hand and eye almost as much as it does on mental alertness.

The applicant must be between eighteen and thirty-five years of age. He must be at least five feet five inches in height and weigh not less than 130 pounds. He must present a medical certificate stating that he has no signs of disease and that his body is free from physical defects. If he passes the mental examination he is examined by a medical officer of the government, and if defects are then discovered, he is disqualified. The physical tests are as searching and as severe as those necessary to enter the army or navy.

In addition, he must furnish a satisfactory certificate of character. He is bonded when he enters the employ of the government, and this inquiry is followed by the surety company's own investigation. The clerks are literally picked men. Uncle Sam is cautious in his selections.

The First Examinations.

The mental test is especially adapted to the work. The applicant is examined in all the branches of a common school education. An accurate knowledge of our geography is essential. The candidate must also have a fair knowledge of the "lay of the land" all over the world. The examination particularizes on the transportation routes, both land and water, in the division in which the applicant resides. He must have a thorough knowledge of these.

Then comes a test that is rather difficult of preparation unless the applicant has natural ability in that direction, reading difficult styles of writing and deciphering readily and accurately all sorts of seemingly illegible addresses. A great many more letters are now addressed in typewriting than was the case even a few years ago, but still there are many millions of letters that are addressed by hand by careless persons. It takes twice as long to read one of these addresses as it does a typewritten one.

So much out of the ordinary run of education is required of the railway mail-clerk that before the days of the correspondence schools or others that specialize in this branch of the postal-service it was difficult to pass the first examination. Now, however, the civil-service manual of examinations gives a number of sample questions for the guidance of applicants.

High Percentages Count.

After each examination by the Civil-Service Board a list of those who have passed, with their percentages, is published. One hundred is perfect, and the man who receives that rating is placed at the head of the list and is appointed to the first vacancy. The rest follow in order and receive jobs as fast as there are places to be filled.

It is not possible to tell how long a man may have to wait before he is appointed. It may be a month or it may be four or five months. It depends on the vacancies, but the higher a man's percentage, the quicker he has a place. When this occurs, he is notified to appear before the chief clerk of the postal division in which his district is located to take the oath of office and receive the first oral instruction in his new duties.

The mail-clerk's life is almost a continual round of study. His first text-book is the railway mail-service edition of the postal laws and regulations. This is called the "black book." He must know it thoroughly. Another book that he must study assiduously at the same time is the "scheme of distribution" of the Post-Office Department. This book contains a list of all the post-offices in each State, shows the postal route or routes on which each is located, and the proper despatch of the mails from each office. He also receives a train schedule for the division in which he is to work and a special map. He must then prepare for the next examination.

Learns to Save Time.

Aided by his "scheme of distribution," the new man prepares a set of cards about the size of calling cards. On the face of each he writes the name of a post-office and the route of despatch on the back. When this set, which comprises all the post-offices in his division, is completed, he spreads out before him his map. With the aid of the cards and the map he must commit to memory the proper routing and every office in the State or division assigned to him.

From his schedule he must study the connections that will insure the quickest delivery of mail at its destination. Distances do not figure. Time is the only element considered. The student finds that it may be possible to gain ten minutes or half a day by sending a letter by some circuitous route that is two or three times the number of miles of the most direct one. It is a game more fascinating than chess.

The clerk's examiner has his own set of cards. These correspond in size and inscriptions with those he has been using, but they may be typewritten or written in longhand, or both. Then he is placed before the "sweat case." The sweat case consists of a series of pigeonholes, every one of which is labeled to represent a certain route or avenue of despatch. The candidate must throw every card representing every office into its proper box within a certain time limit.

Two to Four Yearly Examinations.

When the time limit has expired the examiner, by aid of a cipher code on the back of the cards, a key which he alone understands, reviews the cards and checks all that have been thrown into the wrong pigeonholes. The total number of errors is checked against the total numbers of cards handled, and the percentage is made a part of the clerk's official record. If he passes with ninety-five per cent or better, the substitute, or clerk, is permitted to prepare for examination on the next State assigned to him.

The railway mail-clerk is expected to pass from two to four of these examinations each year. As long as he is in the service he must study constantly. The reason is obvious. It happens very frequently that a clerk may be shifted suddenly from one run to another. If he were not prepared to take up the new work, he would be no better than a beginner.

There are nearly 60,000 post-offices in the United States. In four or five years a railway postal clerk will commit to memory all the details concerning from 3,000 to 15,000 post-offices, according to the locality in which he works. Meanwhile he must keep his car record as free from errors as is humanly possible if he is to be counted as proficient in his work. Length of service, experience, and skill, as shown by his individual record, are the things upon which his promotions are based.

But such study is not all. He must keep close and accurate track of the numerous and frequent changes in train schedules, rural routes, star routes, new offices, and routes established and old ones discontinued. He must also memorize the orders and regulations that he receives from the department. Some of these are confusing even to the experienced man, and now and then he will find one that conflicts with another that has been overlooked. Every change in the postal laws must be observed.

Must Have 100 Per Cent.

Last year there were more than 50,000 examinations of regular clerks. In these, between forty-five and fifty million cards were handled with an average of accuracy a shade above ninety-nine per cent. This average has been climbing steadily. Ten years ago a clerk who could make ninety-five per cent was considered a "phenom." Quite recently those who were ninety-eight or better were considered worthy of honorable mention in the weekly bulletins, but the list soon became too long to print, and it was raised to 99. Now only those who pass with 100 per cent receive recognition in print.

Nine pieces of mail-matter of every ten that originate in the United States are distributed and redistributed by the clerks in the post-offices on wheels, as is a large volume of the mail that comes from foreign countries. Of late years, mail for all the leading cities of the country is distributed—classified according to street and number—on the trains before reaching its destination. The carrier has nothing to do but deliver it. This saves from two to twelve hours.

The postal-service is the most systematic business on earth. Every package of letters and every pouch and sack of mail has a slip or label. This shows the date, the name of the route and of the clerk that "made it up." Whenever errors are discovered these errors are noted on the backs of the slips that accompany the mail. These are sent to the division superintendent. In this way responsibility is located exactly. A record is kept of the number of errors made, and at the end of each month his error slips are returned to him for his perusal so that he may correct his distribution accordingly in the future.

More than twenty-three billion pieces of mail were handled by railway postal-clerks last year. The errors averaged but one to every eleven thousand odd. This is getting accuracy down to a pretty fine point. It should be remembered also that the clerks handle letters containing hundreds of millions of dollars in money-orders, cash, and valuable securities, and that the loss through dishonesty is infinitesimal. Probably there is no other business in the world that has such a record.

Sometimes the clerks must work exceptionally hard. On the heavy runs they usually maintain schedules of six nights on and six nights off, or four on and four off, or two weeks on and a week off. Recent statistics show that the general average of working time for the entire railway mail-service is about 6½ hours per man per day. It depends on the run. The standard hours of duty required are 5½ a day for the runs where the clerks have half time off and run on Sunday.

The clerk works under unusual conditions. Frequently he toils many hours at high tension. His meals and his rest are irregular. When not working, the clerk must take time for study, to keep his schemes of distribution corrected, to make out trip reports, monthly reports, and pouch records, and to keep his registry and other records up to date.

Statistics show that between five and six thousand promotions are made each year. The largest number are in the first, third, and fifth salary-grades. In filling vacancies by promotion, the records of all eligible clerks are examined by the division superintendent. He forwards the names of the six best

men, if there are that number, to the general superintendent to be examined and passed on by the civil-service railway mail service board of promotion. This board certifies the names of the best qualified three, and from this certificate a selection of one is made.

Last year a new Federal law went into effect. This law, in addition to increasing salaries, provided for the promotion of clerks annually, instead of compelling them to wait for vacancies caused by death, dismissal, or resignation. Each promotion means an increase of $100 a year salary. When the clerk has reached the maximum of the successive annual grades, he may be promoted for specially meritorious service until his pay reaches $1,800 a year. The different grades and annual salaries at present in force are as follows:

Grade	1	not exceeding $ 900
"	2	" 1,000
"	3	" 1,100
"	4	" 1,200
"	5	" 1,300
"	6	" 1,400
"	7	" 1,500
"	8	" 1,600
"	9	" 1,700
"	10	" 1,800
Chief Clerks		" 2,000

In addition there are assistant division superintendents at $2,000, assistant superintendents at $2,200, and division superintendents at $3,000.

The clerk should realize that his duties require a fair education, a good memory, good eyesight, and a sound mind in a sound body, because his work taxes brain and muscles simultaneously. He must be of the strictest integrity and self-reliance.

The standard of conduct is high. The dismissals from the service are less than three-fifths of one per cent a year. Resignations are few, and are decreasing. In the last six years they have varied from 5.18 per cent to 2.46 per cent of the total force employed. From this it is fair to assume that the clerk does not find his job unattractive.

The veterans of the service are receiving more consideration than ever. The matter of pensions is being discussed, and the government already pays an indemnity to the heirs of those who lose their lives in accidents during service. It has already been proposed by the Railway Mail Association, the clerks' brotherhood, that veterans, on retirement, should be placed in charge of the second and third-class post-offices, at present political patronage. If this were done, says the association, the efficiency of the Post-Office Department would be much increased

PANAMA CANAL SHOULD BE SELF-SUPPORTING.

DOUBTLESS all will agree that the Panama Canal ought not to be a continuing burden upon the general taxpayers of the country. It should be made commercially self-supporting, if that can be done without unduly restricting the usefulness of the waterway to the commerce of the United States and to the trade of the world. The canal will have cost the people of the United States at least $375,000,000. The interest and principal of this investment must be paid either from the funds secured by general taxes or from the revenues derived from the canal tolls. Political prudence as well as sound methods of public financiering will make it advisable to require those who derive immediate benefit from the Panama Canal to pay a reasonable toll for the use of the waterway. The United States should conserve its revenues. They are required in ever larger amounts for the promotion of the public health, for public works, and for the maintenance of the military power and naval prestige of the United States. Taxes must inevitably increase, and if the burden of carrying the Panama Canal is to be thrown upon the Federal Treasury and the taxpayers of the country instead of upon the producers, traders and ship-owners who make profitable use of the canal in carrying on their business, the reasons must be clear and convincing.—*Railway and Locomotive Engineering.*

Don't forget to punch the tickets of experience on life's run.

The Strength of His Kind.

BY GEORGE GRAY.

CHAPTER XVI.

Kaku's Sudden Plan.

HEN Kaku left Uapilou and her old father, many wild plans jostled through his mind. The girl and her parent would not have been so independent but for the plentiful supplies they possessed. Therefore Kaku could have his way more quickly by destroying the old man. He only had to return on foot, through the woods, and set fire to the log house and the cache, watching for a time when Uapilou would be absent with the dog that always followed her.

But if he did this at the beginning of winter, his supplies would not hold out if the girl finally consented to go away with him. He finally decided to wait until spring.

Kaku had a good winter's trapping. The fur was abundant and of good quality. As soon as conditions permitted he took his pelts to Flying Post and sold them, spending a week there among others who had come to trade.

Then he returned to Kenogaming, went down the shore of the lake, on the west side, unseen. Entering the river at the inlet, he cached his stuff and made his way along the shore and through the woods to the camp where Uapilou and her old father lived.

His plan was of the most brutal simplicity; the only weapon he took was an old pistol—one of the useless and silly purchases which Indians sometimes make. He could shoot the dog if need be. A kick would settle the old man.

Kaku had his tump-line wrapped like a belt about his waist. He could knock the girl down, tie her up and compel her to walk back with him to the place where he had left his canoe. He could also truss her up and go back for the canoe. It was a crazy idea, of course, but he had been brooding so long, had become so full of gall and bitterness, that he thought of no danger The girl would be his. He would show them!

The wind was blowing in his face as he walked, and he knew that he could approach very near the camp before the dog would scent him. During the last part of his journey he proceeded with infinite caution, and finally reached a place from which, through a tangle of vegetation, he could obtain a view of the camp

The old man was seated on the big log near the fire. He puffed away at his pipe, enjoying the sunlight that warmed his old bones. But Uapilou was not in sight. Kaku waited patiently, yet eagerly, for more than a half hour, and finally he saw her as she came out of the log house. At once he perceived the baby strapped to her back. His pupils dilated; his upper lip curled into a silent snarl

His ideas changed. Another plan came to him. Revenge was in his grasp —a means to tame and subdue her.

Uapilou busied herself at the fire for some time; then she sat and nursed her baby, singing the low, plaintive songs of Indian mothers. Later on she placed the little one on its padded and hooded board, wrapping it in many folds, and suspended it on a peg near the door of the cabin.

She left it there and went down to the water's edge, where she knelt upon a flat stone and began to wash some baby clothes in the clear, cold water, while Maigan crouched near her, his

Began in the February Railroad Man's Magazine. Back numbers for sale at this office.

furry tail over his nose, basking in the sunlight.

Kaku wriggled back for a short distance and snaked his way to a spot where the log cabin was between him and the others. Reaching the back wall he crawled on with a stout stick in his hand. He had nearly reached the door before Maigan, who had been sniffing, became fully aware of his presence.

The dog leaped up with a fierce growl and dashed toward him, bristling and snarling with rage, and Uapilou sprang to her feet wildly.

But Kaku was watching the dog, and when it flung itself at his throat he struck it a fierce blow—loud and thudding—that broke the club but also stretched the dog unconscious.

The Indian then dashed up to the cabin, seized the baby and placed it, board and all, under his left arm. Then he started through the woods like a deer.

Uapilou shrieked. Dashing into the log house she came out with Tom's rifle. She was crazed with grief and rage, but Kaku had disappeared.

She heard him, however, and started in pursuit, leaving shreds of her thin cotton dress hanging upon dead branches.

At length she saw him; he was not running quite so fast, thinking to lead her on farther and farther.

She had come within a fairly short distance of him, when, turning his head, he saw that she had a gun. She could have shot at him, but feared to hurt the baby, and kept after him.

The man was now doing his best, for he had an angry woman after him, but with all his exertion he was unable to distance her.

She was coming, always coming, leaping over obstacles, her breath panting and gasping. In her madness she had been shouting at him, but now she was saving this exertion .

She tore after him with long, easy strides that he could not shake off. It was a race now, with two implacable contestants, neither of whom would stop until the last breath.

The weight of the gun hindered Uapilou, yet Kaku was also bearing a burden that was clumsy and which impeded his efforts. At times the girl came quite near, and then Kaku sought desperately to go faster. He was thinking that she must soon drop behind; he was so nearly ready to quit that for some time he clung to the hope that she must fall, exhausted, behind him, for it did not seem possible that such a terrible gait might be continued further.

But Uapilou was strong. Her youth counted in her favor, while the loss of one of his eyes made him less quick to pick his way. She only had to follow him.

They had gone for several miles. Kaku had tried to make some abrupt turns, hoping to lose her, but always she was behind him, and always very near.

Now he heard the dead twigs snap under her feet and the alder branches as she roughly pushed them aside.

Then came a moment when he was tempted to cast away the child that cumbered him, but the fierceness of his desire for revenge was too strong.

Soon he could hardly think, for his heart was getting weaker and his breath was gasping. He was not far from the place where he had left his canoe.

His gun was there. He would reach this place, and then it would be a duel between them, and he would kill her, if need be, so that the broad-shouldered man he hated would never see her again.

He ran on in a last desperate effort, and reached a place where the ground was rising. He slipped on a smooth rock and nearly fell.

But, as he stumbled, he dropped the child. Just as he did Uapilou raised the gun and fired at him.

Shaking with the frightful exertion of the chase, her aim was not true and the bullet whistled over his head. Yet in a moment he had picked up the baby and was off again.

Uapilou had stopped for a second only, and was still behind him. Then he became exhausted. The sweat that ran down his face blinded his only eye, and he swayed as he reached the open space where Tom and John were standing.

The big root of a burned spruce caught his foot, and he pitched forward. Again the baby rolled out of his arms, and he tried once more to regain his balance, but the gun again went up to Uapilou's shoulder, and she shot, blindly, unstead-

ily, without taking a real aim. The Indian went down again, limply, like a rag

John and Tom were running towards them, but Uapilou had not seen them. She picked up her child, unhurt, and kissed it. Then she reeled and fell unconscious at its side.

When they reached the place where Kaku had fallen forward on his face, John and Tom saw that he was trying to lift himself up. Kaku pulled out his pistol, aimed at Tom, and the shot went wild.

John fell upon him and tore the weapon from his grasp. Tom did not stop, he ran on to the girl who was lying on the ground, and knelt beside her, chafing her hands, while a torturing fear came over him that she might be dead.

He looked at the baby, and wondered, but his brain seemed slow to work. He did not understand.

John, seeing that Kaku no longer had any power to harm, came up and stood by as Uapilou opened her eyes. Her first thought was for the baby. But suddenly she became aware of the face that was bending over her and shrieked out her joy as loudly as if it had been a pain instead of happiness too great to bear.

"Maskoush! Oh! my Tom!" she cried, and her arms went about his neck while the tears welled out of her eyes.

"The little baby," said Tom finally. "What is the baby?"

"It is my little Tommy; the little man child of my big Tom," she replied, holding it up to him.

Thus was the precious thing entrusted to his big, clumsy hands. He stared at it and kissed its little face, while a flood of joy came into his heart, for it is a marvelously sweet thing for a man to first behold the thing that is part of his own being and given him by his wife.

"He sure is one of the finest I ever seen," said John

Then Uapilou noticed him, looking at him distrustfully. In her halting English she spoke to him anxiously:

"Why you come? Me no like. You no take my Tom again?"

"It's all right, little woman," said Tom. "He's the best friend a fellow ever had. John's an awful good fellow. He's going to stay with us."

She looked at John, scrutinizing him carefully, noting his kindly eyes and friendly face. Then she put out her hand.

"If him, Tom, he say so it is true," she said. "Him, Tom, he always say what is true."

John took her hand in both of his rugged ones.

"You an' me, little gal," he said, "is goin' to be good friends."

John turned to the place where Kaku was lying helpless on the ground and looked at him, shaking his head. Then he went for his tin cup and brought water, which the wounded man swallowed eagerly. Then John began an inspection of the wound. Kaku had received the heavy bullet on the right side of his back, well to one side. In front a rib had been shattered, where the missile had come out, after passing through the lung. It was a bad wound. John called out:

"Here, Tom, come over. Start the kettle a boilin' for me, quick. Hustle me some hot water."

Then he ran down to his pack, where they had pulled the canoe upon the bank, and found a clean cotton shirt and a couple of many-hued handkerchiefs, which he brought up. As soon as the water was hot he washed the wound and covered it up with one of the bandannas, binding it in place with torn strips of his shirt.

"Now we got to take him over to your camp," he said. "We'd better make a start, takin' both canoes."

Just then, in the woods to the north, rose a long whining howl, and soon they saw Maigan, who had followed the trail the two had made.

The dog was running painfully, and one side of his head was gruesome with clotted blood. His right eye was closed, and he seemed frightfully exhausted. But he did not stop when he saw Uapilou.

"Look out for him, Tom, he's after Kaku!" cried John.

Tom had been standing near the injured man, and caught the dog before he could throw himself on Kaku. Maigan gave a snarl and sought to bite the restraining hand, but at this instant the memory of a scent he had known and loved came back to him, and in a

moment he was whining and crouching at Tom's feet and trying to lick his hand.

Then he got up again, baring his teeth, but Tom held him by the neck and spoke to him, and Maigan understood.

Very carefully John and Tom lifted up Kaku and placed him in the bottom of his own canoe, in which they also piled his belongings, after having carried everything down to the stream.

Their own boat was ready, and they started. Tom was paddling his wife and baby and the dog, in John's canoe, while John followed with the sorry load of humanity he was now trying to help.

"I can paddle, I am strong," Uapilou had said.

"You just sit down there, with little Tommy. Sure I don't want to see your back, after all these months," he ordered.

Uapilou sat in the bottom of the canoe with the baby in her arms, looking at her husband, who was very joyful.

When they reached the camp the old man, who had been sitting disconsolate and full of fear, welcomed them joyfully.

"Thou hast returned!" he said to Tom. "It is well. Now shall we always have food in plenty and good tea and much tobacco! Of the last there remains very little, and I hope there is some in thy packs!"

Tom was too happy to do anything but laugh.

The baby was now swinging on a bough of the silver birch, its beady black eyes closed in sleep. The woman was preparing food for the hungry men, and Tom, after he had helped carry Kaku within the wigwam, came forth to assist her.

Uapilou put her hands on his shoulders and, looking gravely up into his eyes, said:

"Sit down and smoke thy pipe in peace. Thou art home again, with me, as thou didst promise, and I want the happiness of again serving thee."

CHAPTER XVII.

In the Light of Civilization.

A FEW days passed. John and Tom sat together on a rock, idling away the moments and fighting mosquitoes.

"I don't know but I'm half scared to touch her off," said John.

"Kind of a big gamble, ain't it?" replied Tom.

"Looks good, though," asserted John confidently as he rose to his feet.

The charge of blasting powder had been tamped down the long hole they had drilled in the rock and the fuse was in place.

"Where's my matches?" asked John.

"Here's some," said his friend.

John scratched the match on his trousers, but a light puff of wind extinguished it.

"Thunder! I ain't gettin' nervous, am I?"

"'Tain't likely," responded Tom, much agitated.

The second match blazed up, held cautiously in the hollow of his rough hands, and was applied to the fuse, which began to splutter. The men ran a goodly distance to the protection of a fallen tree.

The time seemed unusually long, and they were beginning to think the fuse had gone out when the explosion came. Big pieces of rock flew up in the air and fell among near-by trees, where they crashed through the branches.

John and Tom ran to the big hole that had been torn from the rock, and gave one long look before shaking hands. The vein was big and thick, and the grains of the mineral were scintillating upon the rough fractures, excepting in places where they were blackened with smoke.

After another week of persistent drilling and blasting, which they kept up until they had exhausted their slender supply of powder, they had uncovered a vast amount of ore.

"We ain't but just scratched it, Tom. It's full of it," said John.

They packed a lot of the shining ore in a flour bag, in order to take it back and show it to men who might be induced to form a company for the exploitation of this new field.

In the meanwhile Kaku had been lying in the bark wigwam receiving the best of care. John had instructed Uapilou, as far as he was able, in the matter of nursing the wounded man, and she had listened, silently, nodding her head from time to time to show that she understood.

"It is well," she said to Tom, "if it is thy wish that I should do these things for the man who sought to rob thee."

"It is my wish," he said gravely. "The man is now more helpless than the little one, and I fear he will die. He must be forgiven all that he has done, for there are none of us who may not need forgiveness when the last days come. He is paying his debt, as I paid mine. Take him food and drink, and be good to him for that is obeying the greatest law of all."

After this she cared for Kaku with much devotion, forgetting her hatred of him as the days passed. During the nights John slept near him, often awakening to minister to his few wants, for he lay there like an animal that has been tamed, but is resentful still.

One afternoon, while the others were working at the mine, Uapilou was sitting on the floor near the sufferer. She was giving him sips of water, for his tongue was dry and his lips cracking.

He had been very silent, generally allowing the others to guess at his needs. He did not seem to be in much pain, and his spirit had doubtless been broken, for his face, which hitherto had always shown the bitterness of his resentment, appeared to take on a kindlier aspect. He spoke haltingly:

"Thou are good to me, Uapilou, and thy man and the other, also, are very good; I do not understand."

"Neither do I understand well, Kaku," replied the young mother. "But it is the way of white men."

"Surely not of all white men."

"Not of all, for all do not obey the laws. But this is a good law, for it has made my heart soften to thee, and I, that wished thee dead, now would give much to see thee healed and well again."

Then Kaku looked at her for a long time and shook his head slowly, like a man in the presence of some mystery he cannot compass. Then he kept still for a long time, and his breathing became very shallow and fast. His only eye stared without seeming to see anything. He groped as if wanting something. Uapilou took his hand in her own, and he became quiet. Finally Kaku made an effort to speak and Uapilou bent over him.

"I thank thee," he said very low.

"I am sorry," she said; "I am sorry I shot thee."

Kaku looked at the woman longingly as she bent over him. A smile came over his face.

"It is a good law," he whispered, so low that she scarcely heard him.

Then the end came so peacefully that it seemed like the falling asleep of a child that is weary—and big tears ran down the woman's face.

She left the wigwam and met the two men who were returning, carrying a bag heavy with the product of their mine.

"Kaku, whom I shot, is dead," she announced

"Poor devil. I was hopin' he'd get well, havin' lasted this long," said Tom, much concerned.

"Seems kinder hard on a feller," put in John. "However mean he might be, to die just on account o' not bein' able to stop lovin' a woman."

They walked to the camp very soberly and forgot the weariness of the day's hard work. Later they made a grave beneath the quaking aspens, into which they lowered Kaku, wrapped in his blankets.

That night, as they were smoking their pipes before the brightly burning campfire, John said:

"We got to hustle back to Bisco."

"You can sure find your way alone now, John," exclaimed Tom. "You can fix everything. Anything you do'll be all right."

"You just got to come, and Uapilou, too," he answered.

Then a fear came over the trapper—one that had already disturbed his mind, and of which he had not dared to speak.

"For Heaven's sake, Tom," he cried, "the law ain't goin' to do nothin' to Uapilou for killin' Kaku. Between me and you I decided for you, but between you and her, man, it's more'n I could stand. You ain't goin' to do anythin' to her, are you? The law don't compel you, does it?"

Fortunately John realized that he was entirely capable of deciding such a knotty point.

"I don't know all of the law. If I did I'd be a lawyer, which I don't noways care to be. The law can't do nothin' to Uapilou, because the deceased was a runnin' away with the goods on

him, which is the baby. That makes him out a burglar or a highway robber, I don't rightly know which, but it's of no consequence.

"Stands to reason any one's got a right to shoot that kind of a feller, if he can hit him. An' this brings to mind the fact as since it was a woman as shot him there ain't no question as it was an accidental death, or comes awful nigh it. The deceased ain't makin' no complaint, an' I don't see as I've got to say nothin' about it, both you an' me bein' satisfied it was an accident—see?"

Tom's admiration for John's erudition knew no bounds.

"I tell you, John," he declared, "you'd ought to have been a judge. You'd have listened to folks when they was tryin' to talk sense."

"I don't know as I would go that far," answered John modestly. "But the law ain't so hard to understand when you studies it some."

"But why must we go to Bisco with you?"

"That's more law. You got to come with me on account of both on us havin' to take up a minin' claim. That's why I took all them measurements, as I've put down on paper. We'll also take one for Uapilou, if that's allowed.

"I guess they wouldn't let us enter one for the baby, bein' as how he wouldn't be much of a hand yet with a drill. Then I'll have to get to Ottawa or Toronto and find some way to get up a company, for it'll take a sight of money to work this up. Guess I'll have a pile of nosin' round to do. You can get back here while I'm doin' it, but not before you attends to something else, on account of another law."

"What's that, John?" asked Tom, again alarmed

"I don't just know how it stands on the law books, lad, but it's something says that a man must be married in these days somethin' besides accordin' to your Indian custom. If you have property you want the law's protection, which can only be certain when you're married accordin' to what the law says. It's all right in the woods, where there ain't no parson, but it looks like you got money in them rocks an' you want to be spliced civilized."

"You needn't say no more, I'm goin' with you. I feel the same way you do about it," said Tom. "To tell the truth, though, I never thought about it much. It's the right thing to do an' I'm goin' to do it. But it ain't all in bein' married before a parson, John, for the big thing is to feel you loves a woman and always wants to do the right thing by her, knowin' she'll stick to you like she stuck to the trail of Kaku till she dropped. You got to love one another the right way."

"I guess that's the idea," assented John.

"Oh, Uapilou!" called Tom.

She came, bearing little Tommy in her arms, looking more beautiful than ever

"Listen, Uapilou. We leave to-morrow. We go to Bisco. Your father can stay alone two or three weeks; there's grub in plenty and he can't travel. We will come back soon."

"It is well," she answered. "We leave to-morrow. I make everything ready. It is good to travel."

"We go," said Tom, "because we are to be made man and wife in the manner of the white people."

"I know, yes; in the manner of the white people. They have Manitou men who say blessings. It is their way, I have heard. I am glad if it is thy wish."

Once again they threaded the maze of crooked rivers and camped by them. Then, for the first time in her life, Uapilou saw a number of houses together and a little church with its steeple and the bridge over which the railroad passes. She heard the roaring of the sawmill, and marveled at it until a railroad train came along.

"It is all a great wonder," she said. "The ways of white people are indeed wonderful."

Tom had pried the big spike out of the door of his shack, and they camped in there, but Uapilou did not think it equaled her log house, though she took pride in the glass windows.

On the day of their arrival the agent of the Hudson Bay post, who was also the postmaster, sent a telegram to Sir Farquhar Thompson. After this he put on his best coat, and made his way to the little church, where many people were assembled for the wedding. The good people saw little to wonder at when

the bride entrusted her baby to a motherly looking woman of her race before the ceremony.

Old friends of Tom came when it was over and shook hands with him and Uapilou, bringing some small presents with them. The girl was proud because, little by little, she was realizing the meaning of it all. This seemed to entitle her and her husband to greater consideration, and she felt that there had been much meaning in the words they had heard, that had sounded, to her ears, very solemn and full of import

Tom's deep-voiced "I will" had seemed like an assurance of still greater happiness.

Tom's old shack, which had been tenantless so long, was occupied that night, and after little Tommy had been put asleep and while Maigan slept on the floor, Uapilou said to Tom:

"I thought that nothing could make me love thee more, yet thou art now more surely my man, and my heart is thine even more strongly than during the long days when I was waiting for thee."

CHAPTER XVIII.

Sir Tom!

DOWN the road two men were walking. One a stoutish gentleman in gray tweeds and a cap, the other a little old man, with side whiskers, wearing a frock coat and a silk hat which, somehow, did not seem to suit the atmosphere of Bisco.

Tom was staring at them

"I know 'em," he said. "What d'you think they're after? It's the man I bumped, down to Ottawa! The old feller as was talkin' to me about my father."

"Well! well!" exclaimed John. "Ain't that queer?"

The two were coming on, evidently having been accurately directed at the station. When quite near the old gentleman waved his umbrella.

"Ah!" he exclaimed. "There you are! We had to come all the way from Ottawa, Sir Farquhar and myself, to have that bit of conversation with you. I hope you are not so pressed for time now."

Tom arose. He was not glad to see these people. For some reason they were part of a past history he was always eager to forget. Deep in his soul there was a resentment against Sir Farquhar.

"Good day, gentlemen," he said, standing very erect, a rather majestic figure when compared with the men from the big town. "I'm in no hurry now, for sure. Plenty time to listen to you, though I don't see as there's anything to say. It's all over with now, an' I guess I ain't holdin' no grudge."

The old gentleman was holding his hat in his hand and sponging his forehead with a handkerchief.

"Dear me! My dear sir, it is no matter of grudge that brings us here. Quite the contrary. My friend, Sir Farquhar, if he will permit me to call him so, has much curiosity in regard to the papers you showed me in Ottawa. He desires to see them, if you will be so kind as to show them to him"

"He can see 'em if he wants to. I always have 'em with me."

From his pocket Tom took the old wallet. After loosening its many wrappings he took out the papers he so greatly treasured.

"Please be awful careful on 'em," he said, handing them to Sir Farquhar.

"Thank you!" said the latter. "I will observe the greatest care."

"It's pleasanter here. The house is kinder warm, though you're welcome if you wants to go in. Uapilou!" he called, "bring out a chair, will you?"

The young woman came out, bearing an old chair with a rough wooden seat. She had been looking at the newcomers, wondering.

"She's my wife," said Tom. "Had to wait in the woods a whole winter, while you folks had me locked up. Our baby, he was born then, with me far away, and no one to say a word of kindness to her."

"I really believe," put in Sir Farquhar, "that I was very hasty. I am very sorry, indeed. I have made investigation and find that you've always been a very respectable man in Bisco, and well liked. Indeed, I feel that I want to apologize very sincerely for my part in the matter"

"Don't say no more, sir," exclaimed Tom. "We're all liable to make mis-

takes. I sure made a bad one in Ottawa, drinkin' so much. I ain't never touched any on it since."

"Yet I must say that I'm sorry I was not more indulgent to a man in your condition. If I had not had you arrested there would have been none of the trouble with the policeman."

"It's over with now, sir. Just take a seat an' smoke your pipe. I guess you don't use plug?"

"No, thank you. I will look at these papers now."

Then the politically powerful Sir Farquhar sat quietly and humbly, and looked over the papers, while the old gentleman stood behind him, calling his attention to some of their contents.

After a few minutes his hands, still holding the papers, fell upon his lap, and he gazed over the water without appearing to see. He seemed like a man who had been told sad news.

But his head went up, his back straightened again, and he looked Tom squarely in the face, like a man determined to do his duty. He put out his hand, which Tom took.

"The matter which has brought me here is a serious one," began Sir Farquhar. "It is probably more serious to me than to you. There is quite sufficient evidence, both in these papers and as the result of investigations I have caused to be made, that your father was my brother."

Tom's hands fell to his side. He looked at the man who was speaking to him incredulously, wondering if he were in his right senses.

"Sir Lawrence Thompson was the eldest brother," pursued Sir Farquhar, "and Richard Leonard, your father, was the second. He never got on very well with the oldest. The estate was a rather small one, and entailed. Richard was very foolish in endorsing a heavy note for a friend; it ruined him. He was a captain in an expensive regiment and had to resign his commission.

"Rather than ask Lawrence for any assistance, he enlisted in a regiment that was going to Africa. He was at Islandana, and one of the few to escape. He was invalided and came to Canada, finding employment with the surveys for the C. P. R., but the work was too hard for him, I understand, and he went to trapping with some friend he had made. In the meanwhile Lawrence died childless, and your father, naturally, should have come to the title. Long search was made for him. Finally it was discovered that he had died of pneumonia in Ottawa."

"Yes," assented Tom. "That's what this 'ere old gentleman said. Too bad, weren't it?"

"I am afraid you don't understand the meaning of this. No one knew that he had a wife and child. Therefore, I became the baronet, a title I have been holding for nearly twenty years, and to which I have no right."

"I don't see why," said Tom, "if it done you any good."

"My dear fellow, don't you realize that you are Sir Thomas Thompson? Don't you understand that I have been spending the revenues of the estate, which were yours? Can't you see that I have been going under a title that did not belong to me, that I am in debt to you for sums which the lawyers will have to settle?"

"*You're* — my — uncle," was all the confounded Tom could say.

"Yes, I'm the man who had his own nephew put in jail!"

"Don't let that worry you none; we've both said as how we was sorry, an' it lets us out. Now about my bein' Sir Thomas, it's no go. I'd look fine in the backwoods callin' myself Sir Tom! Don't let on about this to any o' the chaps round here. They'd worry the life outen me. If it belongs to me, I make you a present of it, 'cause I sure don't have any use for it."

"But, my dear sir," exclaimed the little old gentleman, "I doubt very much whether you have any right to dispose of a title in such a manner. Quite impossible, I should say, and—and is that baby a boy?"

"Of course he is. You'd ought to see how big he is. Fat as a little hog."

"Just so, my dear sir; just so. Now I must tell you that even if it were possible for you to dispose of your title, you could not do it on account of your son, who inherits it from you, provided he lives."

"I reckon you can't get out of it nohow, Tom," remarked John; "but if you should ask me, I'd say it was mighty

hard on the poor little cuss if he's obliged to call himself Sir Tommy when he's growed. There don't seem to be no end to the mess you got into goin' to Ottawa."

"We will leave that question in abeyance," said the uncle. "It is entirely out of the question that I should retain a title to which I have no right. I will settle the matter, and it is entirely your own affair whether you use the title or not. The estate is yours. It will not amount to more than about thirty thousand pounds."

"What's that?" asked John.

"Some hundred and fifty thousand dollars," answered the little old gentleman.

John whistled through puckered-up lips, but Tom seemed very indifferent.

"Sounds like a lot o' money," he said, "and I guess it is. John an' me we was lookin' for some. We got a mine that's a big thing. Glad if you can help us out."

"Let me hear about it," said Mr. Farquhar Thompson, as he thereafter called himself, to the everlasting sorrow and discomfort of the former Lady Farquhar Thompson

The four men sat on the tiny porch of the shack, and it was finally arranged that some of the samples of ore should be taken to Ottawa for assaying. If it proved as valuable as it looked, a mining engineer would be sent. Tom and John agreed to wait for him and take him up to the mine. The legal matters in connection with it would be attended to.

"Thomas," said his uncle, "if the engineer, in whom I have the greatest confidence, advises me that the proposition is a good one, I will get up a company and put you down for fifty thousand dollars, which I shall immediately subscribe for you. This gentleman," pointing to John, "will have an interest to the full value of his share of the claim, and I am sure the company will employ his services at a good salary. Since you desire it, I will act as your agent in the collection of the revenue from the entailed estate. I believe you are right in trusting me. If you would like to go to England, and see the estate, the place where your father was born, you can draw on me for expenses."

Tom was sitting with his little son in his arms.

"I belong over here, I do," he said. "I'm glad I've knowed you now, an' you're turnin' out to be a fine man. There was a time I'd kinder liked to bash your face in, but that's forgot, an' I'm glad I never had a chance to do it, for it would 'a' been a mistake.

"You an' me is different people, an' has to look at some things different ways. All that money is all right, 'cause it helps me make us happy, an' John, too. He can have all he wants of it just by sayin' so."

"You talks just plumb foolish," said John.

Mr. Farquhar Thompson had undertaken this trip with some regret and at the loss of a distinction that he prized. The hardest part of it was the realization that he would be compelled to abandon it to a drunken ruffian, one utterly unfit to represent the old family, and who might go back to the ancestral acres and bring shame upon them.

"I am glad I came," he finally said. "I had to make restitution—and it was hard. I find that I am making it to a true man, and one in whom the leaven of our family has suffered no degradation. Your work lies here, as you have said. May God prosper you and yours in it. Good-by."

The evening train bore him back to the civilization which accomplishes such great things, but at such cost to life and manhood.

Tom and John are rich men now, as wealth is counted among the first delvers in the waste places. Others are becoming richer than they, but none have achieved greater happiness.

Round about the hole they blasted a town has sprung into active being. Many strong, rough men are working there, and it is quickly becoming civilized. But Tom is beginning to think the place is getting too crowded. He would like to push on further north to find more lonely places that may also bring the daily bread to a hungry world.

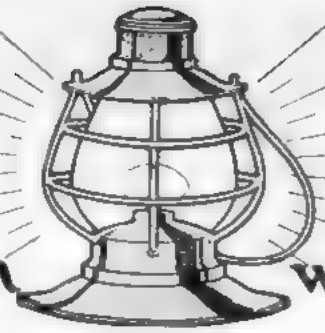
"What'll happen when it gets all settled up?" asked John.

"Then there won't be no more use for our kind, maybe," replied Tom.

Let us hope that time will never come.

(The End.)

By the Light of the Lantern



Ask us what you want to know

WE want to be as useful as possible to our readers, but, because of the great popularity of this department, we are obliged to impose certain restrictions. It is limited to the answering of questions of an informative, technical, or historical nature only. All letters should be signed with the full name of the writer, as an indication of his good faith. We will print only his initials. The editor begs that readers sending in questions will not be disappointed if the answers do not appear as early as expected. It frequently takes weeks to secure correct answers, owing to the complexity of the questions.

H. S. V., Wheeling, West Virginia.—There are two railways in the territory of Hawaii. Hilo Railway has 60 miles in operation and 34 miles under construction. Oahu Railway has 96 miles in operation. The former is of standard, 4 feet 8½ inch gage, the latter 3-foot gage. B. F. Dillingham is president of both companies, with offices in Honolulu.

C. A. S., Web City, Missouri.—The mileage of railroads in the United States is 244,089. Second tracks and sidings, 114,940 miles. Total track, 359,029 miles. The valves on a compound locomotive operate the same as on a simple locomotive. The valves are moved backward and forward and pass over openings in the cylinders. They are so adjusted that the valves open at the end of the piston-stroke and shut when the piston has advanced some distance. This cut-off point may be varied to suit the requirements of the service. Valves are flat-faced or cylindrical. The operation of both is the same. On an oil-burning locomotive the fireman supervises the fuel supply, and while the work is not so laborious as with coal, it requires constant care and, perhaps, a closer cooperation with the engineer. The use of oil-burning locomotives is almost entirely confined to the West and Southwest.

T. T. M., Minneapolis.—Among the principal duties of a fireman before going out on a locomotive is to see that the fire is in proper condition. He must also see that the ash-pan is clean, that the engine has all of the necessary tools and supplies, and that the engineer's oil-cans are filled. He also receives the train-orders, if that is the rule of the road, compares his timepiece with the standard time, and examines the condition of water, coal, lamps, and flags. The Northern Pacific has 1,430 locomotives in service, and the Great Northern has 1,238 locomotives. Before injectors were invented water was forced into locomotive boilers by the use of pumps attached to the working-parts of the locomotives.

WHY does a fast freight-train appear to slow up after it has passed?

(2) I have been told that the Norwich and Worcester branch of the New Haven road is the oldest railroad in New England. Is this so?

(3) What is the mileage of the Central Vermont Railroad?

(4) What type of locomotive does the New Haven road use on its fast passenger-trains?—R. A. L., Danielson, Connecticut.

The optical illusion is not confined to the movement of fast freight-trains, but is observed on all moving bodies, and is owing to the effect of increasing distance, just as objects apparently become smaller at a distance, or as a street seems to become narrower as it recedes. Perspective is a branch of applied geometry, and it may be readily learned that the rays of light which enter the eye from the moving or stationary objects viewed may be considered as forming a cone of which the eye is the vortex. Hence the further the train moves away from the spectator it seems to move slower and become smaller.

(2) No. The first railroad in New England, in fact, the first railroad in America, extended from the quarries at Quincy, Massachusetts, about three miles to tidewater near the mouth of the Neponset River. The stone to build the Bunker Hill Monument was carried over this road in 1827. A granite monument, suitably inscribed, marks the spot. It is situated about six miles from Boston.

(3) 536 miles

(4) There are a variety of types of locomotives used in the service. The Pacific, 4-6-2, being the most prominent in recent years

A. H. B., Jersey City.—The circumference of a circular may be found by multiplying the diameter by 3.1416, or, approximately, 3 1-7. A simple illustration of the method of finding how many revolutions a locomotive driving-wheel makes in running a mile is to divide the number of feet or inches in one mile by the number of feet or inches of the circumference of the wheel. Suppose the diameter of the wheel is 56 inches, the circumference would be 176 inches, and one mile being 63,360 inches, there would be 360 revolutions in one mile

The horse-power of a locomotive is represented by the exertion of a force of 33,000 pounds through one foot of space in a minute The formula is as follows: multiply the mean effective pressure on the piston in pounds per square inch by the area of the piston in square inches. Multiply this amount by the number of strokes per minute, and multiply the amount found by the length of stroke in feet, and divide the last amount by 33,000. The result will be the indicated horse-power. It may be added that the mean effective-pressure on locomotive engines is usually estimated at 85 per cent of the boiler-pressure.

G. J. A., Boston.—Steam gages are tested under the new Federal law at the same time that the boiler is tested—once a month All railroads having repair-shops, repair and test their own gages. Valves generally are not disturbed so long as their operation is satisfactory. Safety-valves, of course, are tested and readjusted, if necessary, when the boiler is inspected. As to special employment in repairing gages, the job is generally given to an expert machinist of whose ability there is no doubt. A new man could hardly expect such a job in a new shop at once, unless his references were of the best.

A. E. G., Lupkin, Texas.—We do not know of a railroad where a strict examination of sight is not a part of the physical tests of applicants as fireman As to what to do when the sight is defective, we cannot do other than advise him to look for some other occupation. If your general education is equal to your handwriting there should be a good position waiting for you.

H. H. McG., Brockwayville, Pennsylvania.—The Pittsburgh, Shawmut and Northern Railroad is owned by the stockholders and is a separate company. It runs from Freeport, Pennsylvania, to Macedon, New York, with 280 miles of track, and 47 locomotives, 21 passenger-coaches, 4,100 freight-cars, and 132 miscellaneous cars. The Erie Railroad, under the present management, has greatly improved its equipment, and in the special department of fast-freight equipment, takes its place in the front rank of American railroads

J. C. McC., Flushing, New York.—The fast passenger-service on the Pennsylvania railroad and New York Central lines between New York and Chicago is almost simultaneous in schedule. The 18-hour trains have been, by mutual consent, abolished. The running time is now 19 hours, which, with one hour added, on account of the difference of time between New York and Chicago, makes the actual time 20 hours. The Empire Express on the New York Central lines has traversed the distance, on special runs, under 16 hours. Both lines carry mails.

W. O. R., Pontiac, Michigan.—The Pullman Company own their cars and also engage their own attendants by special arrangement with the railway companies using the cars. The special markings, or signals, on the electric cars that you mention are of a local character and not in general use. We presume that the markings apply to an extra car run at special periods to meet emergencies in local traffic Locomotive constructors do not, as a rule, publish the prices of locomotives. The railroad companies furnish the details of the locomotives desired, and the constructors furnish the cost estimates. Locomotives cost from $5,000 to $25,000 and even higher, the largest Mallets costing as high as $37,000.

P. F., Glace Bay, Nova Scotia.—The Long Island Railroad has 399 miles in operation and 181 locomotives in service. The Staten Island Rapid Transit has 30 miles of railway and 42 locomotives. The White Pass and Yukon Railway has 118 miles in operation and 13 locomotives. The diamond-stacks that you refer to are a relic of the last century. They served their purpose in wood-burning days. A few have not yet outlived their usefulness, but they are all bound for the scrap-heap or the museum.

A. P., Mt. Lak, Minnesota.—After the steam passes through the high-pressure cylinder, instead of being exhausted into the smoke-stack, as is the case in a simple type of engine, it is exhausted into a chamber leading toward the low pressure cylinder.

This chamber is furnished with an intercepting valve, which opens and closes automatically, and prevents any back pressure on the high-pressure piston when the piston has begun to move in the opposite direction. The proper amount of lubrication necessary on all parts of locomotives has been carefully calculated by experiment, and in the event of the amount not being sufficient, the experienced engineer can tell by observing the piston, valve-rods, and other parts. An added supply of oil is required in the low-pressure cylinders because the oil that has passed through the valves and cylinders of the high-pressure engines has lost much of its viscosity. Running with open cylinder-cocks is not only a loss of steam, but also of lubricant Cylinder-cocks are opened for the purpose of allowing a ready escape of water that may have found its way into the cylinders either because of too much water in the boiler or condensation

W. J M., New York City.—No particular examination is required for the position of engine cleaner. It is the best occupation in which a young man could be engaged preliminary to becoming a locomotive fireman. Applicants for fireman are examined, and a period of service as engine cleaner is a decided advantage.

R. L. W., Bowling Green, Virginia.—The Baltimore and Ohio system passes through New York, New Jersey, Pennsylvania, Maryland, West Virginia, Virginia, Ohio, Michigan, Indiana, Illinois, Kentucky, and Missouri. To this may be added the District of Columbia. The distance in New York and Missouri is limited to a few miles. The Southern Railway has 1,609 locomotives and 53,706 cars. There are 7,036 miles in operation.

E. B., Marion, Indiana.—We could not advise American railway men to look for employment in Brazil. Railroad development is not rapid in that country, though there are a large number of railroads, among which the Central of Brazil, with 1,100 miles in operation and 347 locomotives in service, is the largest. M J. J. DeSilva Freire, Rio de Janerio, Brazil, is locomotive superintendent. The Great Western of Brazil has 917 miles in operation and 134 locomotives in service. Mr G W. Pumfrett, Recife, Brazil, is locomotive superintendent. More than half of the railroads are narrow-gage

C. R., Chicago.—The Chicago and Northwestern Railway embraces the Wyoming and Northwestern, Pierre, Rapid City and Northwestern, and the Chicago, St. Paul, Minneapolis, and Omaha Railway. The lines extend 7,900 miles, with 1,726 locomotives in operation. There are 1,807 passenger-cars, including combination passenger and baggage-cars. Of first-class passenger-coaches there are 855, with but 53 parlor-cars.

RULE-BOOKS state that markers by day shall be green flags. Is it not a fact that most roads now use the tail-lamps as day markers on passenger-trains and some even on freight-trains?

(2) A light engine runs backward by night as the first section of an extra train. Would it not have to display three sets of signal lights, two red for markers, two white to designate extra, and two green for section following?—C. W H., Tunkhannock, Pennsylvania.

Rule 19 of the standard code prescribes that green flags must be displayed, one on each side of the rear of every train running by day. Violations of this rule on regularly scheduled trains are extremely rare. (2) All sections of trains except the last section will display two green lights by night. Extra trains must also display two white lights as well as red lights for markers. Rule 23 states that one flag or light displayed where two are prescribed will indicate the same as if two were used, but the proper display of all train-signals is required

F. C. S., Caribou, Maine.—The Twentieth Century Limited runs over the New York Central and Hudson River from New York to Buffalo, thence by the Lake Shore and Michigan Southern to Chicago. The advertised time at present is 19 hours. The distance has frequently been run in less than the advertised time. No train ever ran between New York and Chicago without stopping There are at least five or more stops.

P. V. H., San Mateo, California.—Several advantages are derived from the use of the brick arch in locomotive fire-boxes. Among these are the fact that the arch is so constructed that a large amount of the flame is deflected backward from the flues, thereby giving an opportunity for a more complete combustion of the smaller particles of coal, which, in the absence of the brick arch, rapidly find their way through the flues in a partially burned state. A similar effect is produced on the smoke, in addition to which it may be added that the sides of the fire-box being to a great extent protected by the bricks on which the arch partially rests, the swiping effect of the flame upon the rivet heads, and even the sheets, is greatly lessened, and as a

consequence the life of the fire-box is prolonged. The same may be said of the projecting ends of the flues. These rapidly deteriorate in the absence of the brick arch. The flues, smoke-box, and spark-arresting devices are more easily kept clean.

A blower, so called, is an appliance consisting of a valve opening into the boiler whereby a jet of steam may be conveyed through a system of piping to the smoke-stack, thereby creating a draft which, acting upon the fire, superinduces a more rapid combustion.

A SAYS that the wheels of a car running 60 miles an hour up grade will turn faster than going down grade at the same speed. Is A correct? If so, why?

(2) Is there any such thing as a self-feeding coal-burning locomotive?—P. M. B., Columbia, South Carolina.

A is wrong. The tendency to slipping is greater up grade, especially on a wet track, but in the absence of slipping the velocity of the wheels is the same in both directions.

(2) There are a number of automatic stokers in use, but the general opinion is that they are still in the experimental stage. None of them has met with general approval.

L. G., Paterson, New Jersey.—The general dimensions of a baggage-car are: length, 60 feet 9½ inches; height, from the rail to the top of the roof, 14 feet 3 inches; width over the sills, 9 feet 9½ inches; height, from the bottom of the car to the top of the body, 7 feet 7½ inches.

The dimensions of a passenger-car in popular practise, distinct from sleeping-cars and from the more luxurious parlor-cars or chair-cars are: length, 60 feet 10½ inches; height, from the rail to the top of the roof, 13 feet 10 7-16 inches; width over the sills, 9 feet 10½ inches; height, from the bottom of the car to the top of the body, 6 feet 10 inches. The diameter of the wheels of a six-wheeled baggage-car is 40¼ inches. Diameter of passenger-car wheels, 36 inches. Postal-cars are usually built after plans and specifications approved by the superintendent of railway mail-service in whose district they are to run. They are owned by the railway companies, but when in use are under the exclusive control of the post-office authorities. The common dimensions are: length, 60 feet 9 inches; width over the sills, 9 feet 8½ inches. The interior storage, fixtures, and boxes are variable.

R. A. R., Piqua, Ohio.—Over 30 per cent of the volatile matter in coal is expelled in coking. A bushel of coal in Indiana is 70 pounds, in Pennsylvania, 76 pounds; in Alabama, and several other States, it is 80 pounds. A bushel of coke is almost uniformly 40 pounds. The use of coke in locomotives would not be a saving, but the contrary.

A. L., Des Moines, Iowa.—From the last official reports, the United States produced in one year 24,654,308 tons of steel; Great Britain, 6,565,231 tons; Canada, 835,487 tons, and all other countries together were estimated to have produced 325,000 tons.

W. H. W., Chester, South Carolina. Train No. 9 on the Carolina and Northwestern could not be run on November 24, 1912, the new time-table No. 15 taking effect at 12 P.M. on that day. The new table calling for a start of the same train at 11 55 A.M. could not come into effect until the succeeding day. This does not prevent a special train from being run at any time by those in authority.

A. F. R., Kansas City, Missouri.—Your questions in regard to the hundred largest railroads and bridges, and the names of particular bridges in remote parts of the world are too vague to warrant us in an attempt to answer. Your questions are not sufficiently explicit—in the matter of the one hundred largest railroads, for example. Largeness may mean either miles of track or value of equipment. In the United States, for instance, the Chicago, Burlington and Quincy has the greatest mileage, 9,003 miles, with 1,663 locomotives. The Pennsylvania has tracks extending 8,500 miles, and 5,614 locomotives in service. Which road may be considered the largest depends on the eye that looks at them.

J. M. T., Kansas City, Kansas. The estimated cost of a common box car with steel underframe, steel side-frames, and steel roof is $1,500. The weight is 36,000 pounds; capacity, 100,000 pounds; length, 40 feet 6 inches; width 8 feet 10 inches; height, 8 feet.

THE load on a locomotive being increased, in what ratio will its speed be decreased?

(2) May not a railroad system like the New York Central or Pennsylvania lines be brought about by mere agreement as well as by stock ownership?—F. S., Sandusky, Ohio.

There is no fixed ratio on the basis of which the variation could be calculated. Charts are available showing the resistance in pounds per ton for freight-cars of different weights at speeds varying from 5 to 40 miles per hour on straight, level track. These

charts are based on the results of experiments conducted by Professor Edward C. Schmidt on the Illinois Central Railroad. These show that the resistance of light cars is greater in pounds per ton than that of heavy cars. Thus, a car weighing 75 tons is seen, from the table, to have a resistance of 5 pounds per ton at a speed of 45 miles per hour, while a car weighing only 20 tons has a resistance of 11 pounds per ton at the same speed. We would require the weight, the speed of the cars, and the increased weight proposed. We could then prepare an answer.

(2) There are many other things affecting the establishment of a railroad system besides the two to which you refer, among which is the consent of the State and Federal governments.

C. M. H., Paterson, New Jersey.—The Erie Railroad has 2,258 miles in operation, with 1,429 locomotives in service. Among the more recent additions to the locomotive equipment are 20 Mikado locomotives, which are fairly representative of the Erie's best class of engines. The weight of these engines is 322,050 pounds; total engine and tender, about 485,000 pounds. The freight equipment consists of 49,792 cars. It has 1,288 passenger-cars.

SEVERAL CORRESPONDENTS.—The potential, or heating, energy of coal is not in any sense charged against the fireman or engineer. They are simply competing against each other, and at the coaling stations the quantity of coal contained in each bucket is well known. Whatever quantities may have been removed previously is of no consequence to the fireman. The thefts that occur after the coal is put on the engine, of course, counts, and it is almost impossible for the fireman to constantly guard against these discrepancies. This is the only real grievance in the complaint. It is well that it should be aired. As to heat being the source of all power, you are wrong. What about the two great forces of attraction and repulsion? Probably you have forgotten about water, wheels, and tides and winds.

D. M. C., Jefferson, Oregon.—The Santa Fe system has 5,827 miles of railroad in operation. It has 1,871 locomotives of all types, including both Mallet and Mikado. Its 3009 is the largest locomotive in the world. The Santa Fe has 1,423 passenger-cars and 62,787 freight-cars.

P. F. R., Pontiac, Michigan.—The word "sabotage" is of recent origin. Suppose American engineers wore wooden shoes—sabots—and struck for better wages or conditions? If they should decide that they could best fight their cause by using the sabots as weapons, you would have an instance of the derivation of "sabotage." Sabotage is now accepted to mean injuring machinery or property, attacks on property with dynamite, and similar forms of waging a strike or fighting for the interests of labor.

L. J. S., Minneapolis, Minnesota.—We believe that the Pennsylvania Railroad experimented with an arc electric headlight as far back as 1885. Between that year and 1890 the electric headlight was used probably in more or less of an experimental way on the Cincinnati, Hamilton and Dayton, the Indianapolis, Decatur and Western, the Chicago and Eastern Illinois, and the Vandalia line. The electric headlight became a known commercial success about the year 1897. Perhaps some of our readers can inform us when the first electric headlight was used.

L. G., Starkey, New York.—The United States is not an absolute Christian country. It is the "United States of America," permitting all religions without professing any. In this country a man can have any kind of religion he likes, or no religion at all, if that suits him better, and the laws, made pursuant to the Constitution, will see that he is not molested; but the country, as such, has nothing to do with religion in any form. It is no more Christian than it is Mohammedan or Buddhistic. The men who founded this government wisely decreed that between the State and the religions there should be no connection whatever.

H. H. M., Grand Rapids, Michigan.—A distant signal is a fixed signal situated from 1,500 feet to 3,000 feet or more in the rear of a home signal to indicate to an engineer whether or not he may expect to find the home signal in the clear position. It is distinguished from home signals by a notch in the end of the blade.

A home signal is a fixed signal at the point at which trains are required to stop when the route is not clear. As a block signal it stands at the entrance to the block. At interlocking plants, home signals stand immediately in the rear of the switches, derails, crossings, and draw-bridges which they protect.

H. B., Hattiesburg, Mississippi.—Block signals are operated either by electrical or other mechanical devices in congested districts, or by the use of towers in rural districts, and while the method of operation in general is the same in principle, the variety of details are very great. One of the most

common methods is to divide the distance traversed by the trains into blocks. These blocks may vary from one mile or less to several miles. Taking three such blocks as an illustration, as the train approaches Tower A some particular signal will be displayed.

Presuming that the block ahead is clear, a clear signal will be shown generally green. Assuming that another train is immediately following the first train as it approaches Tower A, a danger signal will be displayed—this signal remaining at danger until the preceding train has passed Tower B, when the signal at Tower A will be changed to clear position.

The tower-men communicate with each other by signal-bells operated by electricity. Moreover, Tower B can prevent Tower A from giving a clear signal, even although no train is in the block. Tower C operates in the same manner toward B as Tower B operates toward Tower A, and so on until the entire distance is traversed.

H. L. S., Wichita, Kansas.—Carefully compiled statistics for nine railroads built within ten years, and altogether fairly representative of conditions in eastern and western New York, West Virginia, Pennsylvania, Texas, and Central northeastern Ohio, show an average cost of $49,000 a mile, exclusive of stations and signaling equipment. The rails used average 80 pounds to the yard.

The Chicago, Milwaukee and Puget Sound, known as the Pacific coast extension of the Chicago, Milwaukee and St. Paul, to Seattle and Tacoma, extending 1,400 miles from Mobridge ("Missouri Bridge"), South Dakota, was commenced April 15, 1906, and placed in operation in 1909. It established a record in railroad building.

This road had facilities for expeditious construction that were unknown when the other transcontinentals were built. Improved tools of all kinds were used, and other railroads hauled its supplies.

The road crosses three mountain ranges, two large rivers, and many small streams. At its highest point it reaches 6,350 feet above sea level. Its Western terminals are at sea level. The cost was estimated at approximately $85,000,000, or about $60,000 a mile, but it is reported actually to have cost nearer $115,000,000, or $82,100 a mile.

The cost of construction in Minnesota, then known as a prairie State, where the building expense is far below that in mountainous country, is estimated by the railroad commission of that State at not less than $54,210 per mile.

(2) Each mile of track requires from 2,600 to 3,000 ties, worth in the various sections of the country to-day, including freight and delivery, from 45 cents to as high as 95 cents each. See "Finding a New Tie," by H. C. Campbell, in the May RAILROAD MAN'S MAGAZINE.

SAFETY-VALVE SHOCK.

EDITOR, RAILROAD MAN'S MAGAZINE:

IN reference to your answer to C. H., Central City, Kentucky, in your February number, regarding the spark seen when setting safety-valve, I wish to state from actual experience, that a powerful electric current is present. A young man and I were setting a valve last fall and, noticing unusual sparks, he held a steel bar about 1½ inches from the top of the bolt in the valve, but, as he was standing on a plank, nothing happened. I climbed the ladder, put my hand on the dome, and held the other hand about a foot from his head. I was almost thrown to the ground by the shock that followed and one side of his head was burned. If any of the boys doubt this, let them try it when the pop is working anywhere above 80 pounds.—J. H. W., Yuma, Arizona.

INSPIRATOR, NOT INJECTOR.

EDITOR, RAILROAD MAN'S MAGAZINE:

YOU are wrong about the working principle of an injector, for you have confused it with inspirator. Either injector or inspirator will lift water successfully to about ten feet out of a well or any other place. An injector proper has no cut-off for overflow, but cuts itself off automatically.—H. F. F., New Braunfels, Texas.

EDITOR, RAILROAD MAN'S MAGAZINE:

AN injector is so constructed that a jet of steam acting on a stream of water with which it comes in contact and by which it is condensed, imparts to the resultant stream of water a velocity sufficient to overcome the boiler pressure and force the water into the boiler. There are two kinds of injectors, the lifting and the non-lifting. The principle in each is the same, though the method of operation is different. In the lifting, a jet of steam opens into the overflow-pipe which causes the water to rise in the feed-pipe to the injector through atmospheric pressure on top of the water in the tank. The injector is then primed, main steam-valve is opened, and the steam, coming into contact with the water, causes it to pass out of the overflow, where there is very little resistance, until it has attained sufficient velocity to overcome the resistance of the boiler check and pressure on the check. The overflow can then be closed, and the injector is working. I find that the injector was invented by Henri Jacques Gifford, a Frenchman, who obtained a patent on May 8, 1858. Of course, his original device has been vastly improved.—G. E. H., South Bend, Washington.

What the INVENTORS Are Doing

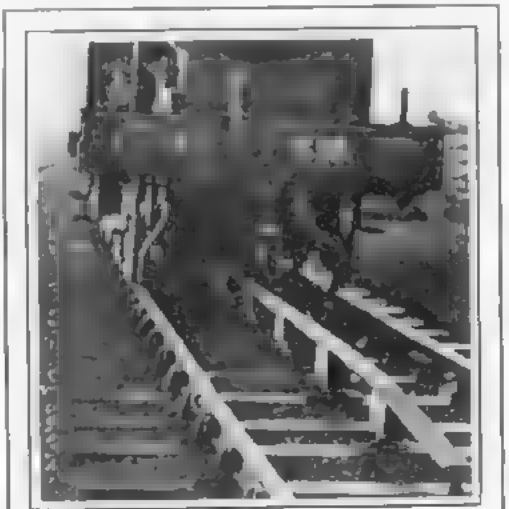
Have you an idea or an invention? If you have, this department offers you an opportunity to bring it before the public. If you think that your idea or invention would improve any of the mechanical devices of to-day, or if it is something new and useful, describe it as simply as possible in three hundred words and send with the description a clear photograph or drawing. Any suggestion that merits further consideration will be given space in this department.

SAFETY RAIL WORKS SEMAPHORE IN CAB.

ONE of the systems of electric safety-warnings now in use on several British railroads is shown in the illustration on this page. The device is not intended to operate as an automatic stop, but merely to indicate to the engineer by signals in the cab the condition of the block his train has just entered. The sections of third rail, which are installed between the tracks, and are slightly higher than the level of the rails proper, are several hundred feet long. Under the engine-frame are wire contact brushes which, with wires leading to the signal in the cab, receive the electrical impulse from the third rail and operate the warning.

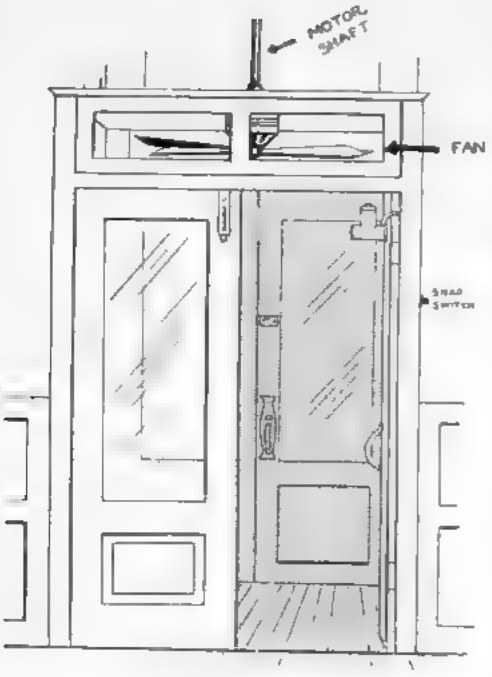
The warning consists of a small dial on which is fastened a miniature semaphore. The semaphore swings from clear to danger, and rings a bell under the impulse of the third rail. The blocks are two or three miles in length. When a block is clear, the current is automatically cut out of the third rail which marks the beginning of that block. If the block is occupied, the current is immediately thrown in and the warning rail becomes operative. The brushes pass over the third rail without receiving any impulse unless the block is occupied; but if the block is clear, the contact brushes take up the current and the semaphore in the cab points to danger, closes another circuit, and rings a bell.

By its use, it is claimed that semaphores are hardly necessary on long, straight stretches, and that trains can be run on very short headway with very little chance of rear-end collisions if the men in the cab quickly respond to the warning. Several of our readers have suggested similar third-rail warnings for American roads, but the tendency in this country seems to swing more strongly toward those devices which are not alone warnings, but are also



ENTER THIRD RAIL WHICH TRANSMITS ELECTRICITY TO [illegible] PASSES UNDER AN ENGINE OPERATING A SAFETY WARNING IN THE CAB

Photograph by Brown Brothers, New York



THE FAN AT THE TOP OF THE DOOR FORCES A SHARP CURRENT OF AIR DOWNWARD, WHICH, THE INVENTOR CLAIMS, WILL KEEP FLIES OUT. THEY WILL NOT PASS THROUGH SUCH A CURRENT

intended as automatic stops. Nothing very practical has yet been submitted.

"SHOO-FLY" FAN.

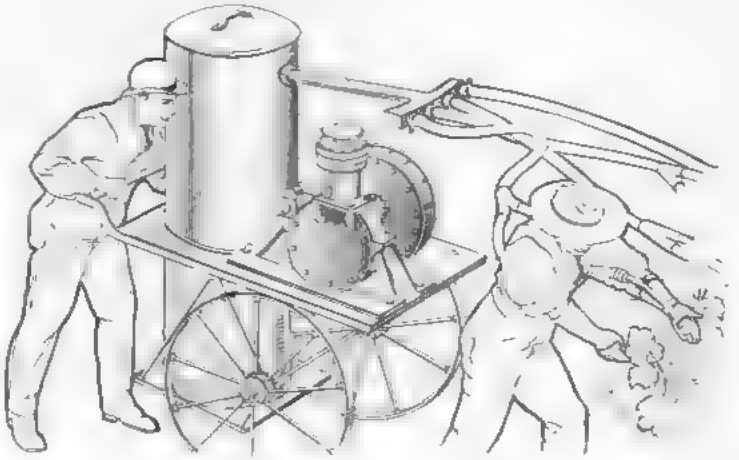
BY the use of an electric fan with two flat blades, C. B. Gillespie, Grand Forks, North Dakota, a reader of this magazine, has invented and patented a novel device to keep flies out of buildings. It is shown in the drawing at the top of this page. The fan is located immediately above the outer doors of the vestibuled entrance, being suspended from a suitable bracket or rod fastened to the ceiling. Above the outer doors is a screened opening several inches in height. Through this opening the fan draws air when in operation.

Set in the door-frame, below the upper hinge, is a button actuated by a spring. When the door is closed it forces this button into the hole in the frame, breaking the circuit and stopping the revolutions of the fan. Thus it can be seen that the fan operates only when the door is open unless the snap switch, indicated by the arrow in the drawing, is turned. The turning of this switch permanently closes the circuit, and the fan remains in motion just so long as there is power to drive it.

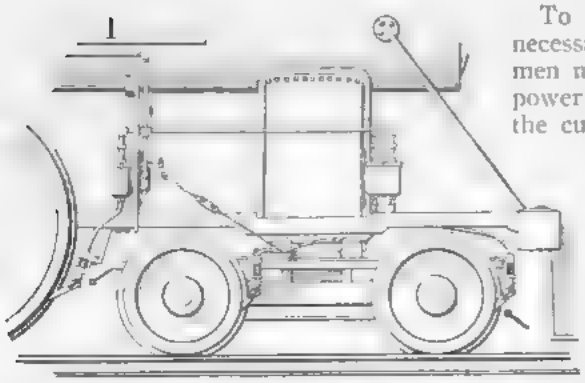
Mr. Gillespie states that he has installed his "shoo-fly" fan in the entrance to his store, and that no flies whatever are able to enter when the door is open because of the downward action of the air-current created by the fan. Flies are usually afraid of two things, strong drafts and moving objects. They are generally afraid to pass through a vertically downward current of air.

When a person enters the store he opens the door and releases the button in the frame, closing the circuit. The fan immediately revolves at high speed, creating what might be termed a "wall" of air, forced downward, which no fly can penetrate.

The fan proved so successful that the inventor posted a notice in his window last summer offering a reward of twenty-five dollars to any one who could find a



THIS COTTON-PICKER WORKS ON THE PRINCIPLE OF A VACUUM-CLEANER. THE COTTON IS DRAWN INTO THE CUPLIKE DEVICES IN THE PALMS OF THE PICKER'S HANDS, THEN DRAWN THROUGH HOSE TO THE CYLINDER.



THIS AUTOMATIC FLANGE-OILER, INDICATED BY THE ARROWS, LUBRICATES TRACK AND WHEELS ONLY WHEN AN ENGINE IS ROUNDING A CURVE

fly in the window or the store. No one collected the money. He thinks that his invention could be advantageously installed in the entrances of factories, office buildings, stores in general, and suites of offices. For power, electricity may be employed through direct connection or by attachment to electric chandeliers or storage batteries of moderate strength.

VACUUM COTTON-PICKER.

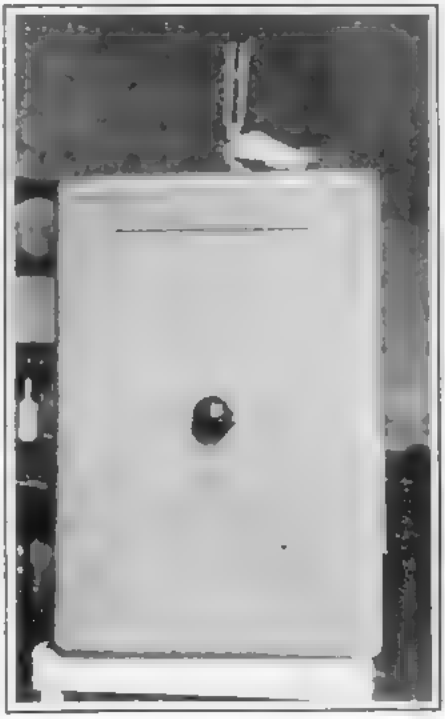
BY the application of the principle of the vacuum cleaner, George T. Merritt, Atlanta, Georgia, has invented and patented a machine for facilitating cotton-picking. His contrivance is shown in the picture at the bottom of page 162. It consists of a two-wheeled carriage with a handle by which its direction is guided by one of the operators. At the rear, extending through the platform of the carriage and resting on a wooden base suspended by rods from the main platform, is a metal container into which the cotton passes after it is picked.

In front of the container is an internal combustion engine, the action of which produces the suction that picks the cotton. From the top of the container extends a pipe to which four lines of hose are attached. As shown in the drawing, the hose ends in two short sections which pass over the shoulders of the operatives and extend downward along the arms to cuplike attachments that fit into the palms of the hands. The use of the fingers in picking is almost entirely eliminated.

To operate the machine it is only necessary to start the engine, and as the men move nimbly from boll to boll the powerful suction draws the cotton into the cups attached to the pickers' palms and up through the pipes into the container. The pipes are made of canvas or rubber to afford flexibility. The suction is created by a fan driven at a high speed.

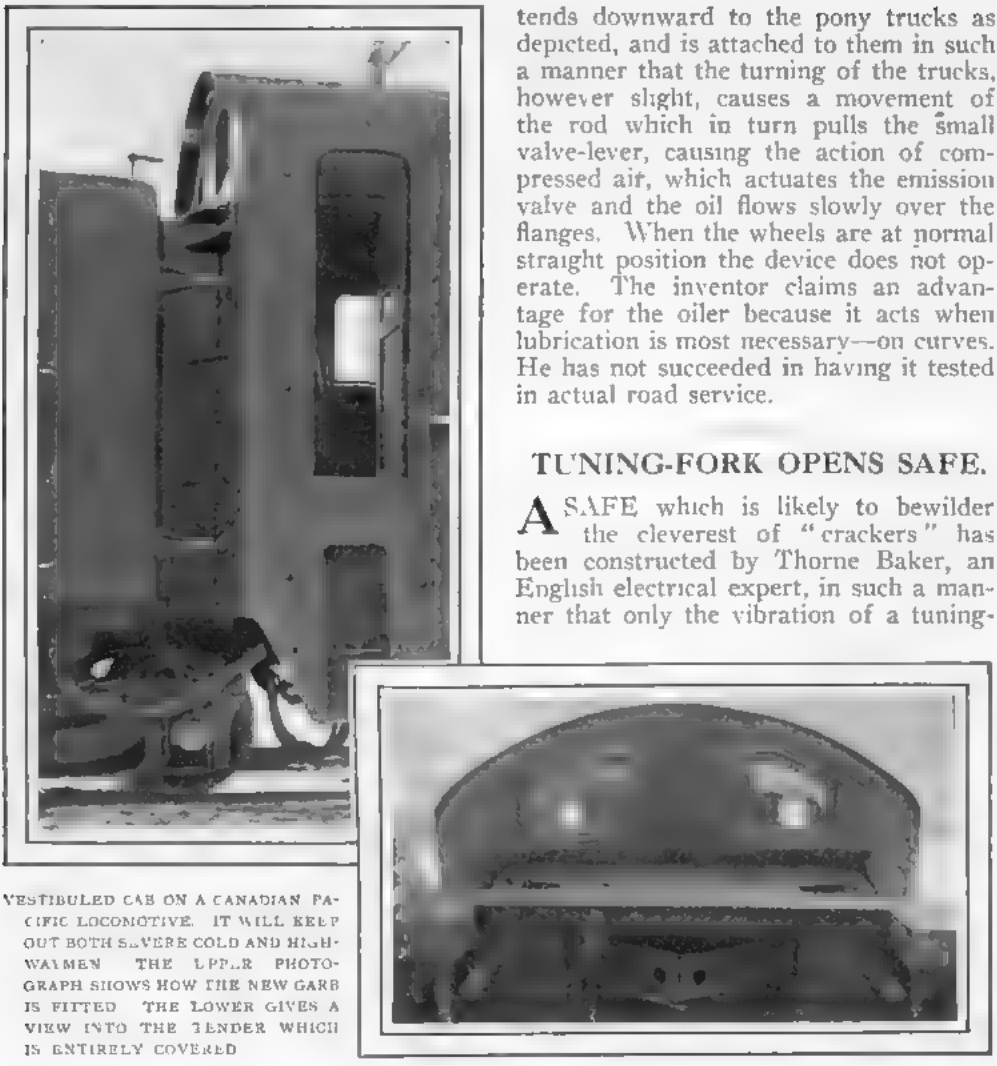
AUTOMATIC FLANGE-OILER.

CHARLES F. HOOFER, Spokane, Washington, has invented an automatic flange-oiler which is actuated by the pony trucks of a locomotive when passing round a curve. The device is shown in the picture at the top of this page. It consists of a container, a straining screen



THIS SAFE CAN ONLY BE OPENED BY THE VIBRATION CAUSED BY TAPPING A CERTAIN POINT ON ITS UPPER SIDE WITH A TUNING-FORK. THE SAFE HAS NO COMBINATION LOCK

Photograph by Brown



VESTIBULED CAB ON A CANADIAN PACIFIC LOCOMOTIVE. IT WILL KEEP OUT BOTH SEVERE COLD AND HIGHWAYMEN. THE UPPER PHOTOGRAPH SHOWS HOW THE NEW GARB IS FITTED. THE LOWER GIVES A VIEW INTO THE TENDER WHICH IS ENTIRELY COVERED

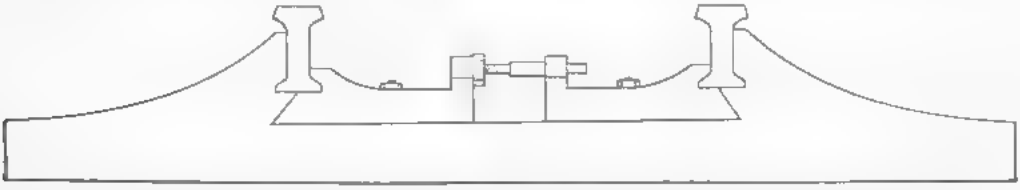
for removing foreign matter, a valve controlling the flow of the oil, and an emission-pipe extending downward to the wheel-flanges as shown in the drawing. It is attached to the engine near the cylinders.

From a lever on the valve a rod extends downward to the pony trucks as depicted, and is attached to them in such a manner that the turning of the trucks, however slight, causes a movement of the rod which in turn pulls the small valve-lever, causing the action of compressed air, which actuates the emission valve and the oil flows slowly over the flanges. When the wheels are at normal straight position the device does not operate. The inventor claims an advantage for the oiler because it acts when lubrication is most necessary—on curves. He has not succeeded in having it tested in actual road service.

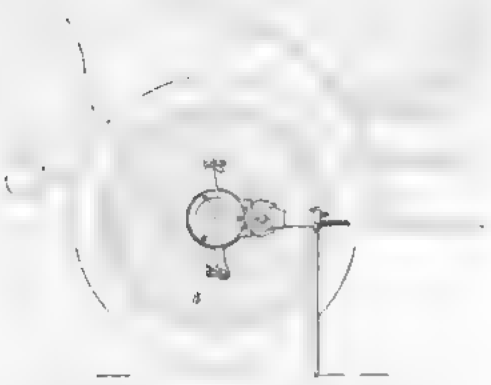
TUNING-FORK OPENS SAFE.

A SAFE which is likely to bewilder the cleverest of "crackers" has been constructed by Thorne Baker, an English electrical expert, in such a manner that only the vibration of a tuning-fork at a certain spot on the outside of the safe will open it. The safe is made of the usual chilled steel, but the knob is equipped with neither combination nor time-clock.

Within the safe and extending downward from the spot at which the fork



THREE-PIECE STEEL TIE TO ELIMINATE SPIKES. THE RAILS ARE HELD IN POSITION BY THE BOLT AND SCREW IN THE CENTER OF THE TIE WHICH ACTS AS A WEDGE



JACK UP YOUR MOTOR CAR, ATTACH THIS PUMP TO THE WHEEL, TURN THE WHEEL AND THE PUMP OPERATES AND FILLS THE TIRE WITH AIR

must be vibrated is a square wooden channel in which a metal string is stretched over an ordinary violin bridge. This string can be tuned to any note in a scale of eight in order to use a different fork if necessary. The string is passed around a peg and extends to the dry batteries at the bottom of the safe. These batteries in turn close a circuit of larger batteries, the current of which, passing through electro-magnets, pulls out the bolts retaining the door.

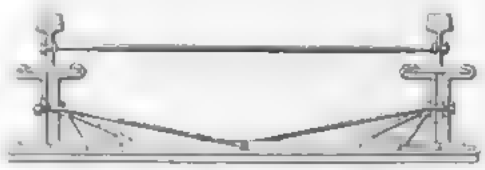
When the tuning-fork is vibrated, the vibration passes along the string and through the peg, it closes the circuit of the smaller batteries, which act on the larger batteries. The strong current is then immediately released and the magnets withdraw the bolts. The attachment has not been applied to very ponderous safes, but it has been accepted as entirely practicable when used on smaller types. The manner in which the tuning-fork is vibrated against the outside of the safe is shown in the photograph at the bottom of page 163.

VESTIBULED CAB FOR LOCOMOTIVE.

FOR the protection of engine-crew in severe winter weather, the Canadian Pacific is equipping its engines with vestibuled cabs. The cab is so constructed that the ordinary gangway and space between the engine and tender is enclosed at all times by the simple flexible arrangement shown in the pictures on page 164. The ordinary gangway is supplanted by a swinging wooden door, the top portion of which is paneled with glass. The door swings inward on each side of the cab. Hand-rails are located at each side of the door, and below the door are steps.

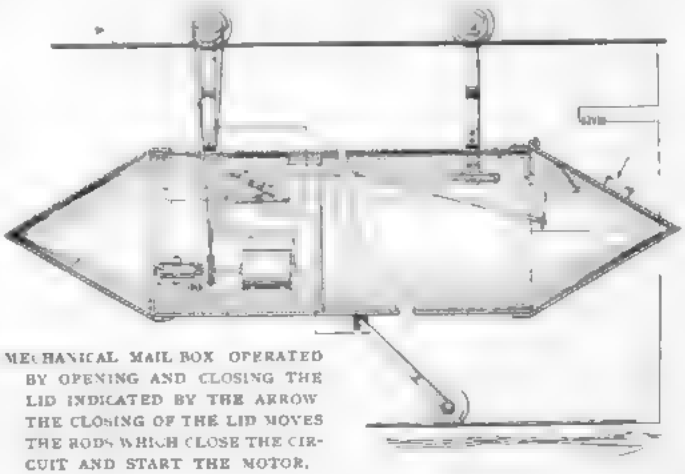
As is shown in one of the pictures, the back of the cab is entirely enclosed, there being only two small windows in the top of the partition. Below is a door through which coal is taken from the tender.

The vestibule attachment is constructed so that it is held against the engine by means of plungers enclosed in suitable casing and actuated by coiled springs.

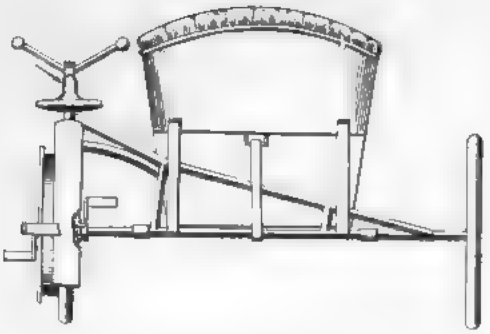


HERE IS THE LATEST INVENTION TO DO AWAY WITH WOODEN TIES. THE RAILS ARE SET ON STEEL BASES HALF OF WHICH WILL BE UNDERGROUND

The front plates of the vestibule are hinged to the side plates and the top is closed by a cover plate. As most of the tenders of the engines on which the vestibules have been installed are equipped with compressed-air coal-passers, it is possible to keep the small doors between



MECHANICAL MAIL BOX OPERATED BY OPENING AND CLOSING THE LID INDICATED BY THE ARROW. THE CLOSING OF THE LID MOVES THE RODS WHICH CLOSE THE CIRCUIT AND START THE MOTOR.



BUGGY FRAME AND WHEEL WHICH CAN BE ATTACHED TO AN ORDINARY MOTOR-CYCLE

tender and cab closed practically at all times. The attachment has met with much favor. One hundred passenger and freight engines have already been equipped with it.

THREE-PIECE STEEL TIE.

THE track construction shown in the drawing at the bottom of page 164 is the invention of T. W. Wade, Brady, Texas. He claims it will end the menace of spreading and broken rails and rotten ties. The tie is of three pieces, the body proper, which is made with clamplike flanges to receive the outer edge of the rail bases, as shown in the drawing, and two supplementary sections which serve to hold the rails in place. One side of these sections conforms to the uncovered contour of the rail base and forces it rigidly against the side and groove of the body proper. Between the inner ends are a bolt and screw, the tightening of which forces the two sections against the inner side of the body proper and the rail bases. The inventor claims that such an arrangement will make spreading impossible. The tie exists only in model form.

AUTO PUMPS ITS OWN TIRES.

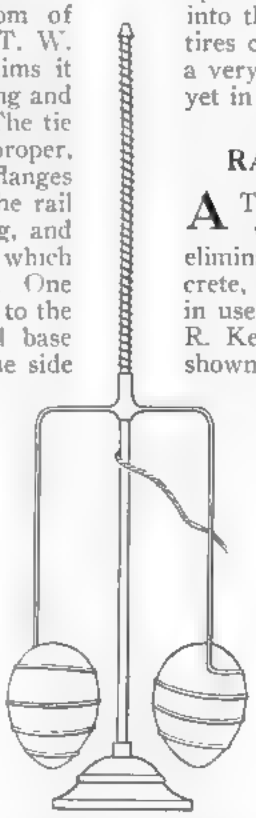
R. A. GOETH, R. B. Rodgers, and John A. Dittmar, San Antonio, Texas, have invented an automobile pump which can be attached to an automobile and worked by the auto's own power.

It is shown in the picture at the top of page 165.

The pump can be attached to the inlet valve of the tire

From either side of the rod controlling the pump piston extends a short metal arm which can be fastened to a spoke on the wheel by clamps. The pump is made so that it can be fitted over the hub of the wheel.

To operate it, the car must first be jacked up, then the pump is placed over the hood, the retaining arms are clamped to a spoke on either side, as shown in the drawing, and the hose is attached to the inlet valve on the tire. When the power is started and the clutch thrown in, the revolutions of the wheel in its suspended position turn the arms connected with the spokes, and these arms operate the pump piston and force air into the tire. With this attachment, tires can be automatically pumped in a very short time. The pump is not yet in actual use.



THIS EGG BOILER IS TIMED BY A FUSE WHEN THE FUSE BURNS OUT THE EGGS ARE COOKED.

RAILS WITHOUT TIES.

A TYPE of track construction which the inventor claims will eliminate the use of either steel, concrete, or wooden ties of the sort now in use, has been patented by Charles R. Keck, Springfield, Illinois. It is shown in the drawing in the center of page 165. The lower portion on which the rails proper are placed is practically a substitute for a tie. The two upright portions are set on a base the ends of which pass upward and around the outer edge of the bases of the uprights. The uprights are held in a rigid position by the brace bars and bolts shown in the drawing. The flat tops of the uprights, like those of the main base, terminate in upturned clamplike flanges which, the inventor claims, will securely hold the rails in place without the use of any other means. Further

strength is added to the position of the rails by a brace bar extending through the rails just below the heads and bolted at the outer ends. The inventor states that durability and absence of lateral movement are the principal advantages.

SELF-PROPELLING MAIL-BOX.

A MAIL-BOX which will propel itself from point to point on an elevated track has been invented by Warren H. Dodson, Bovill, Idaho, and is shown in the drawing at the bottom of page 165. The principal purpose of his invention is to provide a box the direction of whose movement is mechanically reversed by the opening and closing of the lid which is indicated in the picture by an arrow.

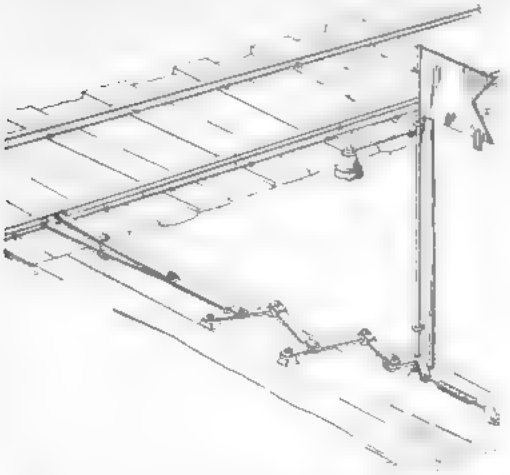
The box is equipped with a motor having a shaft on which is a speed-controlling screw. Passing around this shaft and extending upward over the forward wheel or trolley is a belt which actuates this wheel. The contacts which close or open the circuit and operate the motor are located just above the motor, as can be seen in the picture. To these contacts is attached a rod or lever that terminates in a V-shaped joint which is attached to a rigid support and moves on a pin in the lower end of the support.

The outer point of the V is attached to the lid in such a manner that when it is closed the V is swung downward and forward on the pin, causing a movement of the connecting rod and closing the contacts, thus throwing in the circuit and starting the motor.

When the box reaches its destination, the opening of the lid pulls the V upward and forward and, through the medium of the connecting rod, breaks the contact.

The inventor does not say what the capacity or speed of such a mechanical carrier might be, as this would depend upon the particular use for which such a box was intended. To prevent the car from swaying, a single wheel and shaft

A SIGNAL-LIGHT TO PENETRATE HEAVY FOGS
AN INTENSELY VIVID FLASH IS PRODUCED BY SLOWLY DRAWING THE CARBONS APART
Photograph by Perry, Berkeley Cal



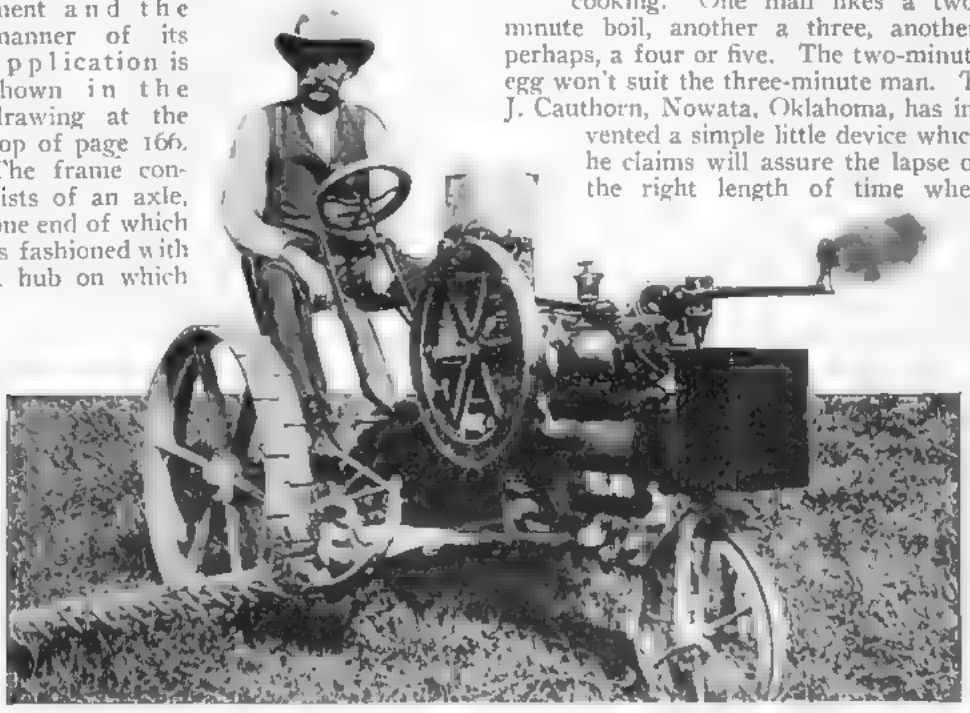
BELL AND FLAG SIGNALS FOR GRADE CROSSINGS
THE LEVERS ARE OPERATED BY THE TRAIN PASSING OVER A HINGED JOINT PLACED SOME DISTANCE FROM THE CROSSING AND PROJECTING ABOVE THE RAILS.

is connected to the lower surface and runs along a small rail

DETACHABLE BUGGY AND FRAME FOR MOTOR-CYCLE.

A DETACHABLE buggy and frame for a motor-cycle has been invented by Henry W. Gehr, Wadena, Minnesota. The attachment and the manner of its application is shown in the drawing at the top of page 166. The frame consists of an axle, one end of which is fashioned with a hub on which a motor-cycle wheel is attached; from this axle another steel rod extends forward in a diagonal direction, and to it is attached another steel rod, extending parallel to the rear axle. The rear rod or axle is attached to the frame of the motor-cycle near the hub of the rear wheel, the parallel rod is attached near the motor, while the diagonal rod is attached to the frame a short distance below the handle-bars. The rear rod and parallel support the seat-frame and seat

When ready for use, the cyclist takes his place on the motor-cycle seat, while one or two passengers occupy the buggy. The power of the motor-cycle is sufficient to propel the vehicle at a fair speed. Several types of these motors with a detachable side car are already in use. They afford much of the pleasure of autoing without entailing the greater cost of an automobile.



THAT THE HORSE IS BECOMING A THING OF THE PAST EVEN ON FARMS IS SHOWN BY THIS INVENTION OF A RHODE ISLAND FARMER WHO OPERATES HIS MOWER SUCCESSFULLY WITH A MOTOR

FOR BOILING EGGS PROPERLY.

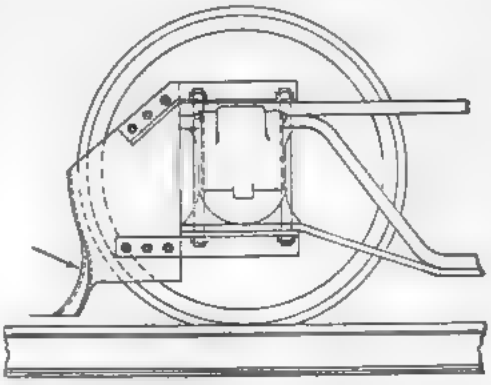
A GOOD egg is made or marred in cooking. One man likes a two-minute boil, another a three, another, perhaps, a four or five. The two-minute egg won't suit the three-minute man. T. J. Cauthorn, Nowata, Oklahoma, has invented a simple little device which he claims will assure the lapse of the right length of time when boiling an egg. The drawing on page 166 shows the device. It consists of an upright rod about twelve inches long, with a base. On the rod is a collar fitted with arms terminating in small wire baskets to hold the eggs. On the upright rod is a spring which is attached to the collar, and in a normal position serves to draw it toward the top of the rod.

By means of a fuse made of twine soaked in a solution of saltpeter, the collar is drawn down and held in the lowered position In the lowered position, the baskets are submerged in the water. The fuse, if made of ordinary wrapping twine, will burn at the rate of an inch a minute. On its length, consequently, the duration of the period of

boiling depends. When the fuse has burned to the collar, it is no longer effective in holding it in the lowered position, and the spring immediately pulls the collar and baskets upward, drawing them out of the water when the proper time has elapsed.

POWERFUL FOG SIGNAL-LIGHT.

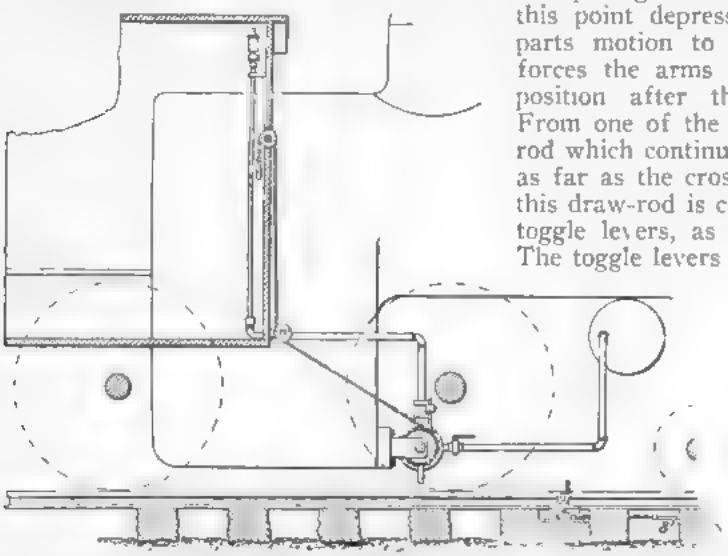
THE powerful fog signal-light shown in the photograph on page 167 is the latest invention of R. C. Douglas, San Francisco. The lamp mechanism is quite similar to that of the common electric arc-lamp, but its periodic flashes are much more penetrating. It is highly efficient in daylight as well. In the lamp, two carbon rods separate gradually while electric current is flowing across the gap between their ends. The electric arc is thus literally stretched several inches and converted into a flash or flame and then "blown out" by an electro magnet. The flash is several times brighter than the small steady arc which is possible only in a small gap. The practical value of the device has been recognized by the United States Supervising Board of Steamboat Inspectors, for the inspectors have already permitted its installation on a number of vessels. Its flame of a keen, pale, bluish hue, which might best be imagined by comparing it to the vivid flashing which occurs when a trolley-pole slips from the wire.



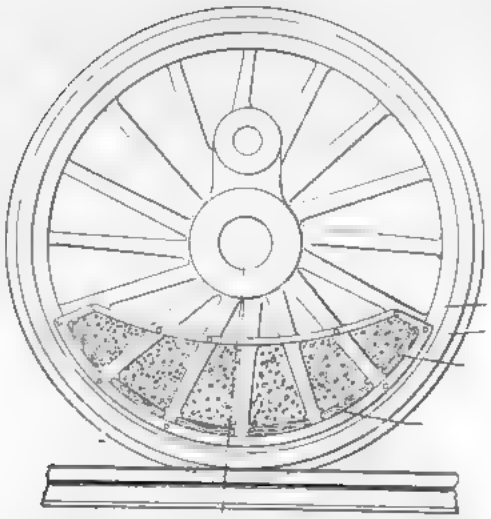
SAFETY-GUARD FOR WHEELS. THE ARROW INDICATES ITS POSITION. IT EXTENDS DOWNWARD CLOSE TO THE SURFACE OF THE RAIL AND IS INTENDED TO PREVENT LOSS OF ARMS AND LEGS

AUTOMATIC CROSSING WARNING.

AN automatic visible and audible warning for grade crossings, shown at the bottom of page 167, has been invented by John F. Reeder, Shelbyville, Illinois. About a quarter of a mile from the crossing is a hinged arm which projects above the rails at its hinged joint. The passage of wheels over the track at this point depresses the joint and imparts motion to the arms. A spring forces the arms back to their original position after the train has passed. From one of the arms extends a draw-rod which continues parallel to the track as far as the crossing. At the crossing this draw-rod is connected to a series of toggle levers, as shown in the picture. The toggle levers run to the base of the upright on which a bell and wooden red signal shaped like a flag are mounted on a movable perpendicular bar. The depression of the hinged joint by the wheels of a train imparts motion to the draw rod which, in turn, moves the toggle levers and



SAFETY SIGNAL OPERATED BY A TRIP PLACED NEAR THE RAILS. THE TRIP COMES IN CONTACT WITH ANOTHER PLACED ON AN AIR VALVE. THIS OPENS THE VALVE AND THE ESCAPING AIR SOUNDS A WHISTLE IN THE CAB



LOCOMOTIVE DRIVING-WHEEL WITH A COUNTERBALANCE MADE OF ELASTIC MATERIAL TO REDUCE THE SHOCK CAUSED BY POUNDING THE RAILS

causes the perpendicular bar on the signal upright to turn rapidly from left to right, thus ringing the bell and directing attention to the wooden danger signal.

HOME-MADE TRACTION MOWER.

WITH the aid of a blacksmith, a Rhode Island farmer has constructed a very useful traction mower which will enable him to make other uses of his horses. The advantage of the latest methods of farming with a minimum of labor and maximum of product was first directed to his attention by moving pictures. He immediately made a study of traction engines, purchased a few parts, and, with the assistance of the blacksmith, designed others.

When they were put together they were found to perform very satisfactorily, and the mower will be in action this summer. See page 168.

SAFETY WHEEL-GUARD.

A SAFETY guard for car wheels invented by William T. Lane, Tiffin, Ohio, is shown in the drawing at the top of page 169. The guard wheel is intended for both steam railroads and electric trolley roads. The guard is indicated by the arrow in the picture. The guard is cut and pressed from a single piece of sheet steel, and has a web at the side of the wheel and a flange in front of the wheel. This flange projects downward to within one inch of the rail. The front flange is beveled or inclined from the inner to the outer edge of the track, and this feature, the inventor claims, would tend to push an object or body off the rails. The inventor states that in a vast majority of accidents in which railroad men lose arms and legs the heaviest part of the body is not on the track. The guard would shove the endangered part out of harm.

OPEN-SWITCH WARNING.

GEORGE H. RICE, Honolulu, Territory of Hawaii, has invented an open-switch warning for a locomotive cab, as shown in the drawing at the bottom of page 169.

A "tripper" or finger set at the side of the rail is automatically moved to a perpendicular position when the adjacent switch is open.

A trip equipped with a valve is placed under the cab sufficiently near the rail to strike the tripper finger if it is in the danger or perpendicular position. A pipe extends from an air or steam reservoir to the valve in the trip, and when the finger engages the trip this valve is thrown open.

The opening of the valve blows the whistle shown in the picture near the roof of the cab.

NEW DRIVING-WHEEL.

THE drawing at the top of this page shows the invention of Albert F. Shore, New York City. It is a driving-wheel by which, the inventor claims, much of the shock caused by pounding the rails will be eliminated. Instead of the ordinary metal counterbalance on the wheel he proposes the use of an elastic material such as wood between the counterbalance and the rim of the wheel

This elastic material is indicated in the picture by two arrows. The inventor also suggests the use of slightly tangent spokes.

P. D. POPENOE, DEAN OF MAIL-CLERKS.

In Forty-Three Years' Service, Civil War Veteran Has Traveled 3,576,480 Miles and Survived Forty Wrecks, Though Imprisoned in Burning Mail-Cars.

IN forty-three years of continuous railway service, P. D Popenoe, of Lawrence, Kansas, has not only distinguished himself as the dean of mail-clerks, but he has also distinguished the Railway Mail Association as a splendid example of the sturdy, human material of which the rank and file of mail-clerks is made up. To this add a fine record as a soldier in the Civil War, and Mr. Popenoe's achievement in patriotic utility as a citizen is reduced to its most modest terms.

In the four years that demanded the sacrifice of a multitude of heroes—North and South—Mr. Popenoe fought in the Federal ranks. He was twenty three years old when he answered the call for troops Though he was engaged in some of the most bitter and sanguinary struggles of the war, he emerged without serious injury.

His Life Often in Danger.

Though no spectacular incidents gained him more than the very sufficient honor of a place among the brave men with whom he fought, his service was of that fine, dependable kind which called for some reward. But it was almost five years after his honorable discharge before he was officially recognized, and this recognition came only in an opportunity to further serve his country—an appointment to the position of United States mail-clerk on January 1, 1869.

His first run extended between Quincy, Illinois, and St. Joseph, Missouri. And ever since his appointment he has labored for public service in a mail-car. The chance that carried him unscathed through the Civil War has been as merciful during the forty-three years as mail-clerk. In forty train wrecks of diverse consequences, in a number of cases disastrous, he has survived without serious hurt. Death clutched eagerly at him in burning cars Imprisoned in six, he felt no more than the mere scorch of the fire, for saving hands were helpfully near

He has traveled, in rough approximation, upward of 3,576,480 miles of steel rail, which is tantamount to a vast number

P. D. POPENOE

Photograph by Squires, Lawrence Kan

of runs in the mail cars. In his peregrinations he has handled, computed from averages, about 97,460,000 pieces of mail, or 185,000 a month. His last run was between Kansas City, Missouri, and Salina, Kansas, a distance of 280 miles.

In the word of appreciation, Mr. Popenoe's career as mail-clerk cannot be said to have ended. His retirement is not necessary—only voluntary and temporary. He intends to continue the necessary qualifications in the hope that some day, in the not far future, Congress will grant pensions to the veterans of the service. His return to active labor may take place at any moment, for he can still claim ninety-nine per cent in an examination, though he is slightly over seventy-five years old.

When the Train Stopped.

BY MARGARET BELL.

What the Stranger Predicted as Henry Sat on the Hill and Watched the Cars Go By.

HENRY had one particular ambition to see the trains stop at Sydenham Creek, the little post-office town in the wilds where he lived. He would spend hours watching them as they rushed past leaving clouds of smoke behind

The birds flew screaming from them and the colts lifted terror-stricken heads and fled far back into the woods. Henry loved the birds and colts, and that is why he wanted the trains to stop, only once, perhaps, so that he could see if they really were such terrible monsters as they seemed.

He had a favorite hill near the tracks, from which he would sit and watch the long, black things curling around the bend, across the bridge, and into the distance beyond.

He was a strange child, people said, and did not seem to interest himself in the amusements of other children. He preferred to talk to his pet squirrels or watch for the creeping, rushing long-tailed monster from around the bend.

His father was often impatient with him, and scolded him for his idleness. He said that Henry let the grass grow under his feet and would never earn his salt.

It was Henry's mother who spoiled him a bit, perhaps, for she would listen to his stories of the squirrels and birds and rushing, black trains. Sometimes, when her work was done, she would go with him to his favorite spot on the hill, and there they would sit a long time and watch the trains go hurrying by.

"Here comes one of the plodders," Henry said, one night, as they sat there. The moon had come up and peeped down at them through the elm-trees. "I can always tell it away back, even before it comes to the bend. It makes such a funny noise. The others steal along quietly, without letting any one know they are coming."

"But one always knows when they have gone by, dear," the mother answered. "For they leave such a smoke and quivering of the rails."

She put her arm around Henry's shoulder. A lumbering freight came along, puffing and panting and seeming to crush the rails with its weight.

"The plodders must make the rails tired, mother. They go so slowly and weigh so much."

"But that is what the rails are for, dearest. To keep the plodders in place. It is always the wild, rushing ones that spring from place and bring death."

"I'd like to ride on one some day and go far away past the bend, to see what the other places are like." He seemed to be speaking more to himself than any one else. He was so accustomed to being alone that he might have been saying his thoughts aloud.

The woman drew the boy's head closer. There were so many strange thoughts in that little head!

"It is all much the same as here, dearie. No place is different from another, except as one thinks. It is all much the same much the same."

And yet something within her seemed to say that it was all different, widely different. The boy guessed what was in her mind.

"But, mother, with just you and me it would be different. There would be flowers and birds and squirrels just the same. For you can always have the birds and flowers if you look for them. But the rest would not be the same."

He could feel her tremble slightly, and she drew her shawl closer about her. He noticed how pale she looked and how tired around the eyes. Somehow she seemed a part of the wilds, and yet vastly different. It was the flowers of which she seemed a part. Henry looked at her and knew that she was away from the wilds at that moment, and he did not speak.

A light appeared away in the distance beyond the bend. They knew it by the reflection that was cast ahead on all the trees. Henry's eyes opened wider and he jumped up.

"See, mother; see those are the ones! How they race along and make everything get out of their way!"

The black thing whirled past, leaving a breeze that shivered the leaves of the trees and a long tail of smoke that seemed to melt into the clouds. The woman sat very still and did not reply to his last outburst. She was thinking of some one else just then.

"Thank God, I have given the world some one who does not live only in the material. It is he—the impulsiveness, the enthusiasm, the love of ambition. It must be he. For it was of him I thought. Thank God!" And she laughed a little, grating laugh which sounded of satisfaction and silent hatred. She drew the hands into hers and pulled the boy down beside her.

"Yes, dearest; keep watching them. Do not watch for the laggards. Always remember that you will never be worthy if your desires yearn after sluggishness."

A hard expression came over her face, for she was thinking of the man who sat smoking his pipe and drinking his toddy before the open fire in the shanty down in the valley.

The days and weeks wore on, and Henry noticed the dear eyes become more tired, the face more pale. Their walks were fewer than usual, for snow lay on the ground and the wind across the hilltop was chill.

Henry helped his mother as much as he could. Her hands seemed so slender washing the heavy pots and pans and sweeping the shanty. One day the doctor came and said that she must go away from there. The father swore and said something about her never having been any good. But the doctor took her with him to the nearest station. She was to go to a hospital in a city a great many miles away.

Every day Henry went to his favorite spot on the hill and watched the trains go by.

One day a group of workmen came to fix the bridge over the creek. Henry watched them take out old wooden beams and put steel ones in their places. The trains went by as usual, but the rushing seemed to have ceased. Henry hoped that one day one of them would stop. And he watched even more carefully than before; but they did not.

A stranger came among the workmen one morning. Henry noticed that the men worked harder when he was there. He saw the little boy standing on the hilltop, watching them. And he beckoned him to come over to the bridge.

"Do you like to see the bridge being repaired?" he asked. His voice was kind, and Henry did not feel afraid

"Yes, and I like to watch the trains. They never stop here, you know. Some day, maybe, one will stop, and I can see if it is as dreadful as it seems. They creep around the bend back there like a big snake."

"Perhaps we can arrange to have one stop for you some day, sonny."

Henry's eyes opened wider and he sighed.

"Oh, if you only could, mister!"

"Tell me, why do you like to watch the trains?" the stranger asked.

"Because they are so alive and so much in a hurry to go to other places. Because—well, because they come from other places into the wilds."

"Then you don't like to live in the wilds?"

"Sometimes I do and sometimes I don't. In the wilds I have all the things I love; the birds and the squirrels and the flowers, all—except mother. But there are birds other places, and not so many stumps and brambles."

The stranger laid his hand on Henry's shoulder. He was used to the wilds; but this little fellow interested him.

"Tell me, where's your mother?"

"She's away there. The woods made her sick, and she went away to be cured. But she's coming back some day."

"But the woods may make her ill again, and then what will you do?"

Something within Henry seemed to give way. His eyes were terror-filled and his hand trembled.

"No, you don't think it will be like that, do you? It must not. That is why I must go away then. For what can it be without mother and our long talks? We used to come and sit over there in the evening, when everything was still. In the spring we listened to the frogs in the pond and the robins in the trees. She must get well, and maybe we can go somewhere together."

Henry sat a long time after the stranger had left him. What if his mother would have to go away again? What if she would never come back? No, no; that could not be. He sat thinking until the moon peeped through the ragged elm-trees and the raccoon's cry sounded in the woods.

Winter had almost gone, and the first robin had chirped in the trees. The creek was rushing along in torrents and the snow had left the hills. The workmen had finished their work on the bridge. Henry and the stranger had become fast friends, and each day the little boy looked for a train to stop, as the stranger had promised.

He lived in the Wonderful Beyond, of which Henry had dreamed so often. Some day he might take him to see it, he had said. And a thought had come to the little boy and refused to leave him. If the stranger had been his father! He liked to sit and dream that he was, and that the three of them were living some place where the paleness would leave his mother's face and the tired look would fade from her eyes.

One evening Henry sat as usual watching the trains. He could hear the frogs singing in the creek. A squirrel sat on a near-by stump nibbling at a nut. His father was at home—sipping toddy.

From away around the bend a train was coming. Henry always looked for the reflection of the headlight through the trees.

It was the whistle of an express that seemed to be running more slowly than usual. Soon it came into sight, steadily, deliberately, but surely more slowly.

Henry jumped up. Perhaps it was the train his stranger friend had promised him would stop some day!

Nearer and nearer it came, past the tall old oak-tree where the spring blackbirds were beginning to be riotous, by the hole in the fence, past the hawthorn-tree. It seemed to be keeping pace with the moon which raced over the clouds after it. It crept slower and slower toward the bridge.

The rails creaked and groaned; the brakeman turned his brakes. Henry hurried down the hill. By the time he had reached the tracks the train had stopped.

Three or four men got off. They seemed to be lifting something from the baggage-car. They stood with their hats in their hands while one of them handed a slip of paper to the baggage man. Their movements were so very strange and solemn.

One of them stood beside the long, white box as the train pulled out. He was the doctor who had taken Henry's mother to the hospital. He put his arm around the little fellow's shoulders and pressed a bit of paper into the trembling hands.

"It is a note your mother left with me to give you," he said.

And then the little boy knew that what the stranger had said was true.

That night, when the stars were peeping in through the windows of the little shanty, Henry read the note the doctor had given him.

> I give you into the keeping of John Douglas. Hunt him up, dearest, for mother's sake

Henry remembered that John Douglas was the name of the stranger who had repaired the bridge.

Carelessness is a wash-out on the line to success.

The Grit of Gregory.

BY HENRY LOFTUS LOGAN.

PART II.

CHAPTER VIII.

The Professor's Find.

WHEN the time came for making a start, Professor Brooks asked if it were possible to obtain lodgings overnight in the neighborhood

"From a scientific point of view, Mr. Wayne," he explained, "the land roundabout is interesting—highly interesting I do not think that I can exhaust its possibilities this afternoon. I shall want to work on it again to-morrow."

"If you don't mind roughing it, I think that we can put you up here. A pile of fox-skins and a couple of bear-skins make a comfortable bed on a winter's night," said Mr. Wayne cordially.

The ghost of a smile flickered over the lips of the man of science. "I have slept on the lee side of a snow-wall in Alaska; I have dozed in an Eskimo igloo in Greenland, and I have had a supper of frozen whale-meat just before my Spitzbergian natives formed a circle round me for the night so that the heat of their bodies might keep me from freezing. Therefore, I can hardly count a pile of luxurious skins as 'roughing it.'"

Mr. Wayne looked at the long, uncouth professor with increased respect

Edward and Brooks started, Edward blessing his companion for being the cause of a night to be spent under the same roof as June.

The professor, still silent and wrapped in thought, led the way to the woodland behind the house until they were about a quarter of a mile away. There he divested himself of specimen bags and implements, took another peep at his note-book and, choosing a hammer and a heavy trowel, began to quarter the ground very much in the same fashion as a hunting-dog works when after quail or partridge.

Edward, knowing somewhat of the peculiarities of the savant, watched him in silence, wondering what it all meant.

The professor, still making casts to the right and left, eying the ground narrowly meanwhile, finally stopped, stooped, and examined a piece of rock that jutted from the earth, his air and attitude testifying to his earnestness.

Again he moved on, and again another rock underwent a period of inquisition. This was repeated some half a dozen times and then, all at once, the professor went down on his knees. The trowel was brought into action and the soil flew. A minute of digging, and the hammer took the place of the trowel. The sliver of rock was examined with the aid of a magnifying glass. A gleam of satisfaction shot over the professor's face as he looked. With a grunt of self-congratulation, he moved to another point further to the eastward, Edward following.

It was plain that the professor had struck something that interested him exceedingly, but just what this something was Edward didn't attempt to find out.

Half an hour passed thus and the professor had worked back to the big mass of rock. There was more nosing among the smaller rocks that strewed the ground, a final chipping of one, and the

geologist, wiping his forehead with the cuff of his coat, seemed to gradually come to a sense of his surroundings.

His eye caught the questioning face of Gregory, and then only did a smile of comprehension chase the abstracted expression from the countenance of the professor.

"Edward," he said, with solemn eagerness, "are you aware that you are the owner of a highly valuable property?"

The young man opened wide his eyes. Professor Brooks was never known to jest on subjects that concerned his profession.

"I certainly didn't! What do you mean, professor?" His tone told of his astonishment.

"I mean that this farm is practically a bed of bituminous coal that is singularly free from foreign matter and most rich in carboniferous constituents. It is a free-burning coal of the finest quality. So close to the surface does the vein lay, that the outcroppings are numerous. Accept my heartiest congratulations. We now know why certain rascals are anxious to get possession of the property."

"My God!" was all that Edward could say.

CHAPTER IX.

A Matter for Congratulation.

THE professor shook Edward's hand heartily. The young man returned the grip with interest. Neither spoke for a time. The savant was experiencing the reaction that follows a fit of enthusiasm. A successful geologic quest was with him. Edward was too busy with his thoughts to do much talking.

After another examination by the professor they gathered up their belongings in silence. It was only when they were well on their way back to the house that conversation was resumed.

"Had your uncle, who left you the farm, any practical knowledge of mining affairs?" asked the professor.

"I understand that he had made a series of very lucky investments in lands that turned out to be profitable; but we didn't know much about him or his business transactions."

"What you say throws light on his acquisition of the farm. As I have said, the bed is of a more or less local nature, and it would seem that he took care to get hold of all there was of it. Only a man of geologic experience could have done as much."

"Are you going to acquaint our friends with the result of our investigations?" asked the professor.

Edward considered before replying. "I think so," he said at length.

"They will have to know sometime, and there is nothing served by keeping back the news from them. Besides that, there ought to be a representative of mine on the ground. I think that Mr. Wayne would be just the man, if he would undertake the job."

The professor nodded. "Then, too," he added, "if he held such position, he would feel that he was under no obligation to you as the owner of the land."

The Waynes were both at home when Edward and the professor tapped on the door. It was opened by June.

"You are back early," said Wayne, as he pulled up a capacious chair for the professor and motioned to the younger man to take his seat on an ottoman of skins.

"Yes," admitted the geologist, "we are; but the afternoon has been fruitful."

He glanced at Edward as he spoke, as if inviting him to explain. Wayne intercepted the glance and turned an inquiring look on Gregory.

Edward told of the professor's discovery in concise fashion. Father and daughter listened intently. At the close Wayne drew a deep breath:

"I—both of us"—he glanced at his daughter—"give you our heartiest congratulations, Mr. Gregory. Now we know why others have been trying to get possession of the land." He stopped abruptly, hesitated for a moment, and continued. "You, no doubt, wonder why I and my daughter are here—"

Edward held up his hand protestingly.

"Hold hard, sir," he cried. "We won't discuss that aspect of the situation. All I know is that I am more than grateful to you for acting as caretaker of the place. This house would have gone to rack and ruin if it hadn't been for you and Miss Wayne. Now, look

at it? I hate the thought of leaving it! As to the motives that prompted you to come here, they are none of my business; but I can understand of a half a dozen that would prompt a man to seek the rest and repose these hills afford. And I'd like to add that if anything comes of the professor's discovery—that is, in the way of developing it, you and your daughter's interest and comfort will be duly considered."

"Thank you very much," replied the father.

June rose to set the table for the evening meal. The professor took some specimens of the coal from his pocket and examined them closely. Mr. Wayne addressed himself to Edward.

"We have been here about two years and a half," he said. "During that time I have on four distinct occasions been visited by parties who wanted to know if I owned the farm; if I didn't, who did, and was it in the market? Each delegation gave a different reason for their interest in the land, a fact that didn't escape my notice. As recently as two weeks ago I was approached by a couple of men, one of whom had an evil face and reddish hair. The other was a young man whom I was strongly tempted to kick out of the house, so offensive was his manner to myself and impertinent to my daughter. These men undertook to obtain from me a statement as to my right to be here. This was before I received the call from the men who bore the Gregory letter."

"Did you get the names of the first visitors?" asked Edward.

"No. Our conversation did not progress as far as that." Mr. Wayne smiled grimly. "In fact, I opened the door and ordered them out of the house."

The greater portion of the morning that followed was, as far as Edward and the professor were concerned, spent in confirming the discovery and in obtaining data that could be given to Mr. Widlow as a basis of future action. Edward had decided to place the development of the property in the hands of the railroad president.

At length the time arrived for Edward and Professor Brooks to start back to Hawkberry City, the terminal town. Before going, Edward persuaded Wayne to act as his temporary representative on the farm to keep off prospective intruders and claim-jumpers.

Good-by was said, and the fireman held Miss Wayne's hand just a trifle longer than he did that of her father, and she she made no attempt to release her imprisoned fingers.

CHAPTER X.

The Knockout.

AT Hawkberry City they learned that the next down train would not start for an hour and a half. The day being bitterly cold and raw, they took shelter in the little saloon restaurant near the station.

An Englishman owned the place and, as it had become a lunching point for motor-parties, he had planned its interior somewhat on the lines of a London chop-house of the older sort. The big room behind the bar was partitioned into "boxes" to accommodate from four to six persons. Taking their seats in one of them, the men awaited the coffee they ordered.

From another of the boxes at the end of the room came the blatant voice of a man

"Oh! she's a peacherino, all right, all right! Youse can bet yer silk socks that the boss'll get there! Why, when the old guy, her pa, was looking at me like as if he'd bite the ear off'n me, she were giving the boss the high sign behind his back."

A peal of laughter followed, and the speaker went on

"The old bloke final gets so bad that he slams the door on the wide and looks like as if we didn't go quiet he'd throw us out! As we beat it, I seen the gal throw the flourish to the boss."

One of the fellow's companions asked a question, to which he replied:

"Her name is June—ain't it pretty?—June Wayne."

Edward sprung to his feet as if a thousand volts had been sent into him. Wrenching himself free from the restraining grasp of the professor and forgetful of his damaged arm, he made for the box.

There was no difficulty in picking out the traducer of the girl.

Edward wasted no time in getting

busy. Dashing the man's glass of beer in his face, he followed it with a straight right that had body weight behind it full on the mouth. He felt a fierce satisfaction of the "give" of the other's teeth as his knuckles landed on them

The victim made a desperate attempt to save himself from falling by clutching at the table in the box. Edward sent another vicious straight just below the short ribs that did good work. The man went down and out with a grunt.

The man's companions sprung to their feet and moved around toward the professor. Brooks waved them back, pocketing his spectacles as he did so, which was a sure sign that he was preparing for action.

"It will be all the better for you if you don't try to interfere," he said quietly. "If you do—"

He pointed to the prostrate man.

At this moment, the landlord, a small man, comfortably plump and liquorish, came bustling up.

"What's all this, gentlemen?" he asked. "Fighting? I say, this won't do, you know; it really won't, you know. This is a respectable 'ouse, you know!"

"Hardly a fight," replied Edward. "One of your customers has a fall —an assisted fall. He'll be all right presently."

From the box opposite came a long drawn-out snicker. In it sat "Cud" Harbs, the town gossip and booze-fighter. Cud had been highly entertained by the scrap to which he had been an unnoticed witness.

"Yes, had a turrible fall," he chuckled. "I'd hate ter have one like it. Served him right, too! I'd have licked him myself fur saying things about Temp Wayne's girl!"

The landlord turned an inquiring face to Edward.

"He's speaking the truth," said Edward.

"Then hout you go, and your friends with you," snapped the Englishman, addressing the three men and removing his coat as he did so. "This 'otel can't accommodate parties who goes a saying things about respectable young women. Will you go fighting, or will you go like lambs?"

He began to circle aggressively around the trio.

"Aw, close yer face!" growled one of the men. "Course we'll go if we ain't wanted. Mebbe we'll come back some day and clean this joint out."

"Andy, slip me the blooming bung-starter!" yelled the little man to his bartender. "I'll teach these bounders to come 'ere uttering all koinds of threats!"

The professor touched him on the shoulder.

"You'll excuse me, sir," he said blandly, "but you are hardly living up to your statement that you do not permit of fighting in your hotel. Are you setting an example of peace and respectability?"

"I'm not," replied the Briton frankly. "But I got so bally raw —now go, and go quick!"

The undesirable citizens obeyed, the knocked-out individual being helped along by his companions. His coarse reddish hair, small eyes, blotchy face, thick neck, and bluish scar that ran from cheek-bone to jaw-point were quite noticeable.

"I'll get even on you for this, you dude," he muttered as he passed Edward. "And I'll wait to get even —see if I don't."

"Wot's 'e saying?" queried the landlord.

"He's thanking me for teaching him manners," replied Edward.

On the day following Cud took the trouble to tramp over to the Waynes, where he told the story of the fracas, adorning it with many frills of his whisky-soaked imagination. June listened intently while a deep flush dyed her face

Finally Cud, laden with a good dinner and much tobacco, took himself off. Then June put her arms around her father's neck, as he was watching the departing Cud, and said:

"Wasn't he splendid?"

"Who?" asked Wayne, as a twinkle of laughter momentarily dispersed the settled gloom of his face.

CHAPTER XI.

His Favorite Nephew.

PRESIDENT WIDLOW was as gratified as he was astonished at the news Edward brought back to Winchelstown.

"I suppose you'll shake the cinders now that you've come in for the coal," he said with a laugh.

Edward didn't answer immediately. He was thinking of his old associates and particularly of old Bob Stickley. So he hesitated before he replied.

"I don't very well see how I can couple up the two things, sir," he said slowly. "Providence seems to have shoveled the mine my way, so I suppose I'll have to give firing the go-by, though I hate to do so."

"I know just how you feel, Edward," said Widlow. "There's something in this business that's as bad as the dope-needle. We cuss it at times, but we stick to it all the time—unless coal-mines come our way. Well, in this case, we mustn't let sentiment stand between you and the cash that ought to be yours in the near future. By the way, don't you think that the Park Valley Railroad ought to share in the divvy? If it hadn't arranged the accident that gave you a holiday, you wouldn't have heard of your coal cellar."

"I haven't been considering it from that point of view, sir, but I certainly think that you or the road ought to benefit by the discovery. A short branch line from Hawkberry, and—there you are."

"The idea has already occurred to me, my boy. Now begin at the beginning and tell me all about it, from the time of your uncle's legacy up to the locating of the coal."

Edward did so, not forgetting to relate the incident of the "Alfred Gregory" letter.

Mr. Widlow rubbed his chin thoughtfully as Edward finished.

"You haven't heard from your brother for years, have you?" he asked.

"Not for nearly five years."

"It seems deucedly queer that he should come to the surface about this time—or, that his name should. Well, it's beyond me, and we'll have to put it in the hands of Ellis at once. One thing is plain: others know of the coal besides ourselves."

Edward knew who Junius T. Ellis was. He was not only the counsel for the railroad, but a famous corporation lawyer—the man whom the ex-Governor of the State had employed to break up and send to prison the members of the Carrol-White-McConnel ring. He was also the leader of the Cities Reform Association. He was the dread of lawbreakers from one end of the State to the other.

"You were lucky to get squatters of the Wayne type on your property," went on the president. "Did you ascertain anything about them or the reason why they had isolated themselves among the hills?"

"No," admitted the young man. "Wayne wouldn't talk, and no one in the neighborhood knows anything about them except that they are quiet folk who mind their own business and are charitable enough when the occasion arises. I asked several people, but they evidently know as little about the couple as I do."

"Quite an entertaining enigma," quoth the president. "And the girl is pretty? You'll have to follow this up, Edward! Joking apart, though, it's a good thing to have a reliable man on the ground. And you're sure that Wayne *is* reliable?"

"He hasn't handed me a bundle of gilt-edged references on a silver platter, Mr. Widlow, but I'd stake a good deal on his honesty all the same."

It was finally arranged that Edward should leave the plans for the safeguarding and developing of the property in Mr. Widlow's hands. Mr. Ellis was to get to work on the "Alfred Gregory" mystery, and, through his emissaries, try and ascertain the identity of the persons who were endeavoring to grab the property.

The experts, armed with a letter of introduction to the Waynes from Edward, spent three days in examining the farm and the adjacent lands. Their so doing confirmed the professor's findings. Shrewd old Bob Gregory in purchasing the farm had cornered the only coal-bearing field in the locality. The indications were that the seams ran deeply, but just how deep the experts could not say. At any rate, there was a fortune in sight.

A week's work on the part of Ellis's men—detectives and investigators in the employ of the Cities Reform Association—developed some curious and sensational findings.

According to the inquisitors, a syndicate, the head of which was a man named Ernest B. Hooper, was about to lay claim to the farm on the strength of its being deeded to the syndicate by one Gregory some years before. Hooper and his associates were closely identified in the matter with George S. Hallis, the leader of the party in power in Hall County, in which the farm was situated.

The opposition newspapers had given the name of the "Forty Thieves" to the gang that controlled the political destinies and robbed the treasury of the county at the behest of Hallis.

On the strength of the report Junius Ellis and Edward Gregory had an interview, arranged by Mr. Widlow. The legal luminary was a tall, heavily built man with a cleanly shaven face lined with thought. His eyes were of the "hard boiled" kind, the result of poring over judicial literature. He impressed Edward more as a student than a fighter.

The meeting was not a long one. Ellis wanted to know, chiefly, how Edward could prove that he was the "favorite nephew" mentioned in the Robert Gregory will

The one letter that the old man had written to Edward's father after the visit of the former to the Gregory home was still, fortunately, in the possession of the beneficiary. Among other matters, it alluded to "that good boy of yours, Edward, a fine little chap and my favorite nephew."

Edward had the missive with him.

"That's enough," said Ellis, rising and holding out his hand to his client. "Kindly leave the letter in my possession for a few days. By the way, will you be good enough to mail me something that will serve as an introduction to the Waynes for representatives of mine? I think it well, Gregory, to anticipate any attempt on the part of the enemy to get physical possession of the property."

CHAPTER XII.

A Ride at Night.

TWO days after the meeting of Ellis and Edward the Hall County newspapers published advertisements to the effect that proceedings would be begun against any parties or party who by force or fraud tried to "obtain possession, temporary or otherwise, of all or any of that parcel of land—here followed the official description of the farm—the property of Edward Gregory." The advertisements were signed, "JUNIUS T. ELLIS."

The Waynes saw no more would-be purchasers or alleged owners of the property. Even the chilled-steel criminality and audacity of Hallis and his crew was a poor protection against the thunderbolts of the law that Ellis was ready to hurl at them.

Edward had finished saying good-by to the boys in the roundhouse and the yard. He made for his boarding-house on the outskirts of Netherby. There he found a telegram from Mr. Wayne dated Hawkberry City. It read:

> Sale of properties forfeited to county for unpaid taxes takes place to-morrow morning Middlebar. Your farm listed among them. Take immediate action.

Edward called both Ellis and Widlow by telephone. He made an appointment with Ellis at four o'clock. Then he sent a telegram to Wayne to the effect that he would head off the sale, and was careful to pay a mounted messenger for the delivery of the message.

"When did you pay your taxes last?" was the first question the lawyer asked him.

"I haven't paid any at all. My uncle's will specifically stated that the county had accepted taxes on the farm for a quarter of a century in advance, the presumption of the authorities being that this apparently barren land would not advance in value during that time. I believe that such arrangements are not uncommon in the wilder regions of the State."

"Have you the receipt for such advance payment."

"No, sir."

"Well, I think that that won't matter much. This is another move of the people who are trying to get possession of the land. The auction takes place at eight-thirty sharp in the morning I have ascertained. We will have a special train to Hawkberry City to-night and drive to Middlebar early to-morrow

morning. The county-seat is about twelve miles from the depot."

"Special train?" repeated Edward.

"Certainly. We have missed the last train to Hawkberry this afternoon."

"Mr. Ellis, you must have been pretty busy on this matter since I communicated with you this morning," said Edward.

"Somewhat busy—as our friends at Middlebar will find out later," said the lawyer. "By the way, there are three of my men stationed on the farm. Wayne has been good enough to fix up one of the barns for their accommodation. So that there is no immediate danger of the other side getting possession of the property. If it did pass out of our possession, even temporarily, it would give us no end of trouble. Please be at the station at six o'clock."

During the trip to Hawkberry Gregory and Ellis talked very little. The lawyer had a mass of legal papers in which he was absorbed. Edward did not attempt to interrupt him, but, instead, drew pictures of the future in brilliant colors. The face of June dominated every thought.

The arrival of a special train at the little station was an event of an unprecedented nature. Sam Harris, the agent, had a host of cronies and hangers-on who were everlastingly on the alert for such crumbs of news as he could feed to them. So that not only was the coming of the train known in Hawkberry City an hour or so after Sam had been advised from headquarters, but the added information that he had been ordered to secure accommodation for the two passengers for the night and a conveyance for the early morning were also public property.

Edward and Ellis slept at the Englishman's hotel. After a 5 A.M. breakfast they started for Middlebar, the boniface explaining that the going was pretty rough and that it was well to allow a fair margin of time for unexpected breakdowns.

The rig in which they traveled was supplied by one Abijah Scallows, general store-keeper, truck farmer, and county supervisor. Abijah stood pretty close to the leader of the political ring that circled the public affairs of the county—so it was rumored.

Early as it was, a dozen or so idlers were at the stable door to see the start for Middlebar. Among them was a man who wore his muffler well up around his face and his soft hat was pulled down to meet it.

There was no apparent reason why this individual should have attracted the attention of Edward more than the others, but he did nevertheless.

A big, good-humored Irishman known as "Slam" Fitzgerald drove the rig, the bay mare of which was in a state of nerves when the start was made. Her ears twitched incessantly, ripples of energy coursed along the muscles of her neck and sides and, notwithstanding the sharp chill of the morning, beads of sweat spangled her glossy coat from shoulders to tail.

"I nivir known her to so indacently conduct herself in this loike afore," said Slam, holding her head with one hand, as he cautiously removed the blanket that covered her flanks.

"Steady! ould lady! Where did ye get this jag, anyhow? What's come over ye, thryin' to ate the hand o' me! Steady now, steady! Off ye go then, and run th' divil out of ye if ye can."

He gave the mare her head. After rearing madly she shivered and, with a plunge, started off.

For five minutes or more the rig swept on, reeling from side to side, while Slam, with the reins twined round his wrists, made no effort to stop the wild rush of the mare, but occupied himself keeping in the middle of the road as much as possible.

After a time the mare slowed down to a steady gait. By degrees her pace became slower. Slam used the whip, but to no purpose. All at once Jenny trembled violently, staggered, and sprawled to the ground.

Slam leaped out, followed by Edward and the lawyer. The Irishman intently examined the horse's eyes and felt the throbbing veins of her throat. Then he looked up, and a black frown creased his forehead.

"This poor baste will not take ye to Middlebar this day, sor. Some scoundrel—th' black curse rest on th' evil soul of him—has doped th' mare and doped her bad at that! This 'twas that made her crazy when we started!"

Ellis turned to Edward. The lips of the lawyer were set in thin, straight lines.

"Gregory, we are having a taste of the scoundrels who are trying to steal your property. But we will get the better of them yet." He turned to Slam. "Fitzgerald, I believe that you are an honest man. I do not believe that you had anything to do with this mean trick."

"I should hope you didn't, sor," replied Slam with a touch of indignation.

"It is of the utmost importance that we reach Middlebar by eight o'clock or before. This," Ellis pointed to the prostrate animal, "is evidently an attempt to prevent us from so doing. If you will help us get there in time we will give you twenty-five dollars when we get out of the rig."

"Make it fifty dollars," chimed in Edward.

"Fifty, then," agreed Ellis.

"'Tis a lot of money for a poor man loike meself," declared Slam.

"Well, what do you propose to do?" asked the lawyer impatiently. "The time is slipping by, you know. Eight o'clock and fifty dollars. One minute past eight and a quarter tip only!"

"I'm tryin'," said Slam, "I'm tryin' to figure out th' nearest farmer who'll lend us th' loan of a horse. Let me see —yes, 'tis there we are! Half a mile down th' road and we're forninst th' farm of Payter Van Zandt. 'Tis his sthables that will open up to us. Come along, sor."

Slam picked up one of the buggy lamps and, accompanied by Ellis, led the way. Half an hour later they returned, accompanied by a cheery-faced, chunky person who proved to be the farmer, and a smart-looking horse. The former nodded in friendly fashion to Edward and, without a word, set to work to help Slam harness up. The task finished, Slam requested the others to jump in the rig.

"What about our friend and your mare?" asked the lawyer.

"You pays when you feels like it," interposed Van Zandt. "I look after this so sick horse. What you have to do is to get to Meedlebar quick! Fritz, my horse, he take you there sure by eight clock and sooner."

"We'll remember your kindness, Mr. Van Zandt," called back Edward, as the new horse got into action.

Fritz showed that he deserved the confidence of his owner. He was one of those steady-going, sure footed animals whose speed increases with the distance covered. Half an hour hadn't elapsed before he was thoroughly warmed up and "eating up" the road.

"Yes, gents," replied Slam whimsically, "he and me's as thick as pudding. He knows th' feel of me hands on th' reins of him. And I tould him just now that 'twas oats for him and fifty plunks for me if he'd make Middlebar on time. That's why he's making th' grit fly!"

Some of our strongest convictions are based on the slimmest evidence. Edward, for reasons that he couldn't explain, felt convinced that the mysterious man at the stable was responsible for the drugging of the mare!

CHAPTER XIII.

Calming Mr. Wayne.

IT was exactly 7.50 A.M. when the rig drew up in front of the Middlebar town hall in which the sheriff's sale was to take place. Fritz's flanks were heaving and his nostrils were working rapidly; aside from these things, the good horse gave no sign of the high-pressure speed at which he had been driven for eight miles.

Hanging around the hall was the usual gathering of loafers that a free show of any kind will bring into being. Mingled with these were a score of men whose make-up and conversation marked them unmistakably as lawyers and politicians of the provincial kind.

The dingy hall was pretty well filled when the clock on the tower outside tolled eight o'clock. The sheriff and his aids were already in their places; a half-dozen limbs of the law were clustered around the little platform on which he stood, including Hallis and some of his lieutenants. Also was there a middle-aged man; stout, well-dressed, and the owner of beady black eyes that wandered over the gathering restlessly.

"That," whispered Ellis, "is Hooper, who is hand and glove with the Hallis crowd in this attempted robbery."

A couple of holdings were auctioned off to satisfy the demands of the law. Then the burly gentleman with the iron-gray mustache and bulbous nose who was doing the selling began to read from the printed form the description of the Gregory farm, at the close of which, using the formula of his trade, he asked:

"And now, gentlemen, what am I bid for this desirable property?"

Ellis rose to his feet and walked rapidly up to the sheriff, to whom he handed a document.

"What's this, and who be you?" snarled the official.

"I am not compelled to answer either one or the other of your questions," replied the lawyer, and Edward was amazed to hear the trumpetlike challenge in the speaker's voice, so absolutely different from its quiet conversational tone. "But I'll do so. That is a temporary injunction obtained yesterday from Judge Morsworthy, of Winchelstown, commanding you to show cause why you should not be perpetually enjoined from attempting the sale of this land, such injunction to be based on evidence in our possession. I am Junius T. Ellis, attorney-at-law of the State, and representing the interests of Edward Gregory, the lawful owner of the property."

A sensation ran through that part of the gathering made up of the "Forty Thieves." Before it had subsided, Ellis and Edward made their way out of the hall.

Slam and the rig were waiting on the outside. The huge grin on the face of the Irishman indicated that he had been present. Mr. Ellis produced his pocketbook and paid over Slam's promised reward.

"I think," said the lawyer slowly, "that we'll drive to the farm. The injunction will serve with the sheriff, but there is no telling to what extent Hallis and his henchmen will go. They are trying by every means in their power to get the semblance of a legal grip on the land, being well aware that if they once do this, we may have difficulty in shaking them off. Hallis and certain of the courts in Hall County stand pretty close."

The farm was reached. Mr. Ellis was made known to the Waynes, the three men who were acting as protectors of the property received further instructions, and then it was time for lunch. Mr. Wayne's traps this time had yielded both quail and rabbit. Then the visitors prepared to start for Hawkberry City.

"I wish that you were going to drive over with us," said Edward, addressing Mr. Wayne, but thinking of June.

"I wish so, too," was the reply. "But we haven't a rig."

"The one Brady brought with him is at your service, if you really wish to go," suggested Ellis. Brady was the chief of the trio of guards.

"That is very kind of you," replied Wayne, looking questioningly at his daughter.

June nodded.

"With your permission, then," said Wayne. "I know that my daughter wants to do some shopping."

Hawkberry was reached just ten minutes before the starting time of the train for the south. The party hitched their horses to the shed outside the station and started to walk down the platform, June and Edward chatting merrily. Edward called the attention of his fair companion to the fact that there was a parlor-car included in the make-up of the train.

As he did so, there came from the street the *honk! honk!* of an automobile that ceased as the machine drew up at the station. The next moment the man with the beady black eyes, accompanied by a couple of others, alighted and made their way to the parlor-car. Wayne, turning at the sound of footsteps, looked and drew himself up stiffly with an expression on his face that sent a chill to the marrow of Edward. The deadliest loathing was depicted on the face of Wayne.

Edward saw Wayne's hand steal toward his hip-pocket as he glared at the newcomer.

At this juncture the beady-eyed Mr. Hooper looked up and saw Wayne. For a second a puzzled, rather than an affrighted expression stole over the features of the promoter that was succeeded by horror as recognition took the place of curiosity.

Coming to a halt with a jerk, he called to a husky-looking personage behind him and muttered a few words.

The husky person ranged himself in front and between Wayne and Hooper. Meantime Wayne was making a desperate effort to unbutton his overcoat so as to get at his pocket. The happening had not taken up more than a few seconds.

"Mr. Gregory!" gasped June. "Oh! stop him! He doesn't know what he is doing. Do not let him get at his pistol, I beg of you! He has seen "

Springing at Wayne, the young man wound his arms around him and held him helpless while the promoter and his companions passed on and boarded the parlor-car, the husky party remaining on guard on the steps. Once Hooper was out of sight, Wayne became himself again. Edward felt the tensed muscles relax and so, cautiously, loosened his hold

"Do you feel better, Mr. Wayne?" he asked.

"As well as I ever shall," he answered piteously. "I have to ask your pardon and the pardon of my daughter for allowing my feelings to get the better of my good behavior; but that black-souled beast, Arundel, whom I have just seen, did me the foulest of wrongs some years ago. He got me in jail for a crime I didn't commit. That's why I'm a recluse. Now we will go. Come, June."

"One moment!" cried Edward. "That man's name is Hooper, not Arundel."

"It may be Hooper now; it was Arundel when he—but, good-by."

"Come and see us soon," said June softly, as her eyes met those of Edward. There was a distinct appeal in them, and Edward answered it by promising to be at the farm at the earliest opportunity.

Before he went to bed that night, Edward wrote a detailed account of the incident to Mr. Widlow.

CHAPTER XIV.

In the Clear.

ON the day following Widlow and Ellis had a long consultation, the upshot of which was that Widlow despatched a trustworthy representative to Hawkberry City to find out the owners and the values of the lands that lay between the farm and the station, in view of the prospective branch line that was to connect the coal-field with the main road.

The report that resulted from the investigation was significant. It showed that during the preceding year nearly eighty per cent of the property had passed into the hands of men who were generally recognized as the dummies of Hallis or his chief lieutenants.

"This was to be expected," remarked Ellis, as he folded the paper and handed it to Widlow. "It proves that the attempted snap-sale of yesterday was the climax of a carefully laid plan of rascality that has been maturing for some time. Well, Hall County isn't the State. At the worst, we can bring condemnatory proceedings."

"Have you heard anything further about the Alfred Gregory end of the matter?" queried the president. "It seems to me that somebody's been playing forger in this part of the game."

"I can hardly say that I have; but I've learned that Hooper actually has an option on the land, given him allegedly by one Alfred Gregory, and that if the worst comes to the worst, he will make a fight for the mine on that basis."

Mr. Widlow mused for a moment "If anything happened to Edward, and he died without leaving an heir, his brother—if living—could claim the land, could he not?"

"Up to the time that Gregory has not made a formal assignment of the farm to the company that you are forming, his brother is unmistakably his heir, provided always that the former has not made a will," answered the lawyer.

"Then, if I was the boy, I'd carry a gun," commented Mr. Widlow. "I'll suggest as much to him."

"Just one other thing," said the lawyer, as he rose to go. "I have written Wayne asking him to give me in confidence the reason for his assertion that Hooper and Arundel are one and the same person."

Three weeks elapsed, during which Edward paid the promised visit to the farm and then hurried back to Winchelstown to assist in the formation of the company that was nearing completion.

During the period named Ellis had reduced the mass of reports, statements,

and affidavits to a concise review of the Hallis ring and its relation to the Hooper syndicate.

Then he sent for Hooper to call at his office and explain matters.

Mr. Ellis would be in any day from ten in the morning until five in the evening, and any expense that Mr. Hooper incurred in making the journey would be cheerfully met by the lawyer.

To do his craftiness further justice, Mr. Hooper did not accept the lawyer's invitation. Just where he is to-day, nobody seems to know. His departure for parts unknown was the entering wedge in the big clean-up that followed in Hall County politics.

Neither Edward nor June required much urging to go for a walk. The girl led the way to a sheltered nook in the woods, where she had discovered early spring flowers in bloom. Bully ran along by their side.

Just as Edward was making a bundle of the blossoms they had gathered Bully threw up his head, stuck out his nose in the direction of a near-by clump of wood, and began to bay furiously.

"What is it, boy," asked the young man, as his eyes followed the direction of the dog's nose, "rabbit, fox, or coon?"

"Neither one nor the other," replied June, "Bully isn't a hunting-dog, and I've never known him to give trouble yet to anything smaller than a man."

"Then a man it must be—and so it is!" Edward stopped short suddenly as he caught sight of a form that slipped from the copse to a near-by cluster of rocks. The fancy seized him as he spoke that it was the strange, yet familiar, individual whom he had seen at the stable at Hawkberry.

Bully saw the slinking form also. June barely managed to grab the collar of the dog and prevent him from going in pursuit.

The growl of the dog subsided into a whining grunt, the hair on his neck fell back into place and, with a final "*whoof!*" he turned to June, as if to inform her that the intruder had departed

"Good old boy," said the girl, patting his big neck, "always ready to protect his mistress, isn't he?"

"There are others," interposed Edward quietly.

The girl looked up at him, and that which she saw in his eyes caused her to quickly cast down her own.

"I think that we had better be making for home," she said, in an attempt to turn the subject.

Edward looked straight into her eyes.

"I wish it was our home we were making for," he said deliberately.

For a moment the meaning of his words did not seem to dawn on her. Then, as it did, a slow blush began to suffuse her face and her hands trembled so violently that the flowers they held fluttered to the ground.

"June," said Edward softly.

She looked at him for an instant. He held out his arms to her; she extended her hands—and Edward knew the first kiss of the girl he loved.

Late that same evening Edward started for home

"Where's your rig, by the way?" asked Wayne, as he opened the door and looked outside.

"I'm going to walk back to Hawkberry City."

Edward Gregory started on his walk, his mind filled with the golden thoughts and iridescent desires that come to a young man who has just left the girl of his life and is meditating on her wonders beneath the light of a full moon.

About a hundred yards from the point at which the path merged into the road, a clump of trees broke the steady light of the moon. As he passed these trees Edward was startled by an owl that flew across his path, the weird hoot echoing uncannily in the night.

"Sign of danger ahead," he thought.

With a smile at his credulity Edward shifted his pistol from his hip-pocket to the inside vest-pocket just over his heart.

He had not gone more than a half-dozen steps when a premonition of danger, imminent and deadly, brought him to an abrupt halt. At the same instant came the flash and report of a gun and he heard the vicious whine of the bullet as it sped past his head. His assailant stepped into the shadows. He was heavily masked.

To return the fire and spring back toward the open road were simultaneous actions on his part. His assailant fol-

lowed suit, pistol in hand. In spite of the deadly intent that was made manifest on the part of the other, Edward felt that aversion to use a lethal weapon while there was a chance to take the man alive. So firing a shot in the air in order to secure a momentary diversion, he made a rush at his antagonist and caught his pistol-hand in a viselike grip.

Up and down the road the men struggled. First one and then the other had the advantage, but through it all Edward kept his hold on the right wrist of his antagonist. At length the masked man delivered a cruel kick in the abdomen and, as its agony sent a momentary faintness through Edward, his grip loosened and the other wrenched his wrist free.

With an oath he brought the pistol down on the head of the reeling man, who dropped like a log. Waiting for a moment, the ruffian, cocking his gun, walked toward the unconscious man. As he did so, another man slipped out of a woody clump close by.

"Want any help, boss?" he asked hoarsely.

"No! Get back and watch out! That's what I'm paying you for."

After Edward left the farmhouse that night Bully became nervous. He walked to the door again and again, sniffing at it and commenting audibly on the suspicion he scented. He leaped on the couch of the room and took a long and grumbling look out of the window. Then he resumed his uneasy patrol before the door.

Mr. Wayne eyed the animal with some concern.

"I think that we had better tell Brady of the way that Bully is behaving," he said at length.

Suddenly the dog made a frantic assault on the door, tearing at it as if he would go through the panels.

"Open the door, June," ordered the father. "Let us see what he is after."

June obeyed, and the dog, with a threatening howl, shot off in the moonlight toward the road below. At the same instant there was borne on the night air the sound of a pistol-shot, followed almost immediately by another.

The girl turned a white and terrified face to her father.

"They are attacking Ed! I know they are!" she whispered. "Bully will reach there too late. Oh! what shall I do!"

"Brady will be here in a moment. Wait till he comes!"

"I cannot! I will not wait!" cried June almost fiercely. "I shall see for myself! Do not try to hold me, father! Not even you can do that now!"

Twisting herself from the restraining grasp of her father, she sped through the door and in the direction that Bully had taken, unheeding the commands and entreaties that her father shouted at her.

Wayne was in the act of following her when Brady arrived. Both men set off in pursuit of the girl. As they did so, they heard the sound of another shot.

So intent was the man with the pistol on snuffing out the life of Edward that he did not hear the approach of the dog.

Bully reached the scene of the tragedy in the nick of time. A second more and a bullet would have gone crashing through young Gregory's brain; but before the forefinger of the would-be murderer could tighten on the trigger, Bully jumped from the shadows and buried his teeth in the masked man's throat. With a scream of agony the man fell to the ground, his gun flying out of his hand.

In a few moment June, her father, and Brady arrived. Bully still had his adversary by the throat.

Brady bent over Bully's victim after the dog, with considerable difficulty, had been induced to release his hold. June rushed to Edward and was resuscitating him by vigorous shakings.

Dazedly, Edward got on his feet and, supported by June, walked over to where Wayne and Brady were still looking at the motionless form on the ground.

"Mr. Wayne," whispered Brady suddenly, "get your daughter out of this."

"Why?"

"It's a dead man that we're looking at."

Wayne called the girl aside as Edward walked slowly to Brady.

"This fellow won't trouble you again," said the detective. "Bully's done the job for him. Can you identify him? I've pulled off his mask."

Looking up at Edward with horror and hate still depicted on its ghastly features was what remained of his brother Alfred.

On the Editorial Carpet

**There's a Long Line at the Ticket Window,
So Get Your Pasteboard Early for July.**

GETTING READY FOR JULY.

JULY will be a big number! It will contain one of the most important articles that has ever appeared in the RAILROAD MAN'S MAGAZINE. "Snaring the Bohunk," by W. Lacey Amy. "Bohunk" is the popular name given to the laborers who build the right-of-way through the vast wilderness of the Northwest. Lured to the end of steel villages by an unholy type of agent commonly known as a man-catcher, they are thrust into a condition that frequently drives them to insanity or death. Mr. Amy has personally "covered" as far as Yellowhead Pass the entire stretch of ground of which he writes. He has traversed it on foot, on construction trains, on horse-back, in private cars, and canoes. He went "beyond steel" and lived in construction camps, where he studied first hand the condition of the unfortunate men about whom he writes. His article brings to light the horrors that exist in the unclean end-of-steel villages, and the methods employed by man-catchers to lure laborers—conditions that are now being investigated by both the Canadian and United States governments.

* * * *

In "Science Made Simple," C. H. Claudy will tell minutely how wireless telegraphy works. The work of the most prominent freight agents of the American railroads will be the subject of an interesting article illustrated by photographs of the leading men in this phase of railroading. Then there will be the romantic story of the building of the Chesapeake and Ohio Railroad; the history of the Railroad Y. M. C. A., and the history of the Car and Locomotive Painters' Association.

In "Help for Men Who Help Themselves," Thaddeus S. Dayton will give valuable information to men who seek employment in the baggage department. The alacrity of the "south-paw" operator is described by F. B. Lovett. Dr. William Brady's paper, "Strong Men with Weak Backs," is of unusual interest to all railroad men. "Testing an Engine's Sinews," by Robert H. Rogers, is one of that great authority's best articles. It tells of the growth and importance of a department that guards public safety. Frederick A. Talbot's story of the boring of the famous Lotschberg tunnel through the Bernese Alps, will also appear. We have been holding its publication awaiting photographs from Europe.

* * * *

Most people like stories of adventure, but most stories of adventure are merely freaks of an author's imagination. The real story of adventure is based

on something that has absolutely happened; it is not a whirling mass of impossible escapades. Such a story is "The Paymasters," the new serial which begins in our July number

The author, H M Lome, has written a novel of adventure which has the real grip. It has a twofold value. Firstly, it deals with the sort of real adventure that holds you fast. Secondly, its scenes are laid along and near the route of the Madeira-Mamore Railroad in Brazil This right-of-way, which is only 250 miles long, has just been completed after a mighty struggle of thirty seven years. More than 10,000 human lives were lost in its construction. What the men had to encounter, how they perished, their battles with savages, wild animals, and fevers, are all described in Mr Lome's graphic novel

"The Paymasters" is actually based on the adventures of two Americans who were ordered to find the body of a murdered paymaster and his *mozo* (guide), and also to run down the men who had killed them Don't miss it! It begins in the July number!

* * * *

Suppose you lowered yourself over a cliff and entered a cave to secure a particularly bright red flower for a girl you loved, and met there an escaped convict who was both talkative and desperate what would you do? Perhaps if you read "In the Eyes of the Law," by Tex Houston, in the July number, you will get a valuable idea.

"Keep Donald Frances McGrew steadily on the job," writes a man from Kansas City. "He's got the real dope." We will. Don't miss his "Getting the 403 Ready," in July, in which Clancy encounters a Jonah which spoils his prospects of a high-ball run.

"Mighty glad to see *Hunk* and *Horace* back," writes another reader in Tacoma, Washington. So are we. In July, H. and H. tell what happened to them on their annual vacation.

"When Kemp Passed Out," is the next story of the "That Reminds Me Club," as recorded by Walton Burroughs Kemp sees his own son in the middle of the track his own son whom he knows were better dead! What does he do? We don't want to spoil a good story by divulging the plot but when you read it we'd like to know what you would have done.

You may be glad to know that three more histories are almost ready for our series of "Great American Train Robberies" They are the life-stories of William Quantrell, the famous king of the guerrillas; Jack Kennedy, one of the most daring men who ever held up a fast express, and Cole Younger, the leader of the Younger Brothers.

AN IMPORTANT PROPOSAL.

THE federation proposed by the official organ of the Brotherhood of Locomotive Firemen and Enginemen should receive the very serious consideration of every man in the departments which such an amalgamation would embrace

The federation would include all men directly concerned in road operation. For the powerful brotherhoods of which these men are members to unite in one magnificent body with a common aim is a most momentous and significant step—a step that requires great wisdom and foresight if it is to succeed in its purpose.

It is difficult to predicate now just what the attitude of the various brotherhoods will be toward the proposal, but the tendency of the present is perhaps best suggested by the action of the British workers, when, on March 30, the members of three orders united in one body, "The National Union of Railwaymen."

This perhaps points to what we may expect in America, but, above all, the American railroad man should spare no pains to avoid disastrous error. The organization of a federation with a powerful membership and treasury

is the most important and vital move he can make.

MORE FOOLISH LEGISLATION.

PUBLIC safety will be jeopardized if the bill is passed which has just been introduced in the New Jersey Legislature, designed to prohibit a railroad from testing the diligence of its engineers and firemen in the observance of track-signals.

The Pennsylvania Railroad last year conducted some 51,000 tests, setting signals unexpectedly and without warning. These were measures of safety. The purpose was to test the alertness of men in heeding signals.

In general, the men gave perfect performances, but out of the 51,000 tests there were 510 failures — one per cent — every one of which, of course, had in it possibilities of accident.

The aim of the railroad is to make the men watchful, in order that the failures and accident possibilities will be reduced to a minimum.

If this bill is passed, the elementary and reasonable measure of efficiency and public protection will be destroyed.

The bill provides that in cases where tests of apparatus are to be made, in the operation of trains, the railroad shall give *previous notice in writing* to the engineer and fireman.

Surely no engine-crew would agree to that!

WHO IS HE?

IN The Carpet for April we published the following bit of verse which had been contributed by William Perry, one of our readers:

> Who is this man this J. B. King
> Who writes his name on everything?
> Be it near or be it far,
> You find his name on every car
> He may be poor or may be rich,
> But his name is known at every switch.
> If you could tell me his address
> Many thanks to you I would express
> For queens I do not care a thing
> But I would like to meet one J. B. King

Since the April number appeared we have received a deluge of letters in which the writers endeavor to establish the identity of the man who chalks his name on every car in this chirographical flourish:

Which of our readers is right? Does J. B. King really exist or is he only an imaginary being? Is there more than one of him? If he does really exist, will he please communicate with the editor of this magazine?

Our readers' letters are selected at random:

EDITOR, RAILROAD MAN'S MAGAZINE:

You wish to know this J. B. King
Who writes his name on everything
I'll tell you now where he may be—
And you need not pay one cent of fee
I know him well, I do opine,
For he's employed upon this line
On the walls of this station, where I earn my pay,
I see his flourishes every day.
They are on the door, they are on the wall,
And on the ceiling in the hall
And when upon the track I stroll,
I find his name on a telegraph pole
His name is known in every land,
From arctic shores to the Rio Grande
It's here, it's there, it's everywhere,
From Oregon to Delaware
And doubtless could he reach the stars,
His name would blazon forth from Mars.
This J. B. King, I now confess,
Is a trainman on the S., P. and S
—C. O. L., Spokane, Portland and Seattle Railway, Butler, Washington

I'm J. B. King, a boomer snake,
A switchman, too! Not a "Stinger fake!"
I'm not rich, nor poor, I must confess;
Just bum around; have no address.
The only thing that brings me fame,
Is the manner in which I write my name.
Because my name begins with "K,"
I write "King" first, then make the "J."
I leave a space, as you can see,
Then finish with the letter "B"
—G. SPRATLEY, Sanford, Georgia.

Who is the man that asks this thing?
Where lives this man called J. B. King?
He keeps a store with things galore;
Right close at hand is the Wabash shore.
His store is neat and he keeps it clean,
From the railroad it may be plainly seen
His many thanks I will accept
If he will not his name protect
The State alone is Indiana —
The town is known as Montezuma
—H. J. BENNINGER, Donville, Illinois.

I've found your man—this J. B. King
Who writes his name on everything
He's neither rich nor very poor,
But you're always welcome at his door.
His duty he will never shirk,
This Robert Isaac Odekirk
You might come down, he may be in,
His home is at Waseca, Minn.
If for queens you do not care a thing,
This is your "knockdown" to J. B. King
—ROY BZOSKIE, Sleepy Eye, Minnesota.

J. B. King was a tail-end shack
On through freight that runs to Dunmore and back
Out of Lethbridge, Alberta, on the C. P. R.,
He wrote his name on many a car.

I am told that he drew his time,
And started off for another clime.
Of this I do not know a thing,
For still the cars read J. B. King.

I have not seen the man in question for a long time. He may have moved to another district, but he was here for a year or two, and his name was written nearly everywhere. —J. R, Lethbridge, Canada

J. B. King is, I think, Joseph B. King, formerly of the New York, New Haven and Hartford Railroad. He worked out of New London, Connecticut, on the Providence, Midland and Shore Line division until about three months ago.—A BRAKEMAN, New London, Connecticut.

As I happen to be personally acquainted with J. B. King, I will send you his address and a short explanation of who he is.

J. B. King is a paper-mill man having a large interest in the paper-mills located at Kalamazoo, Michigan, and the way his name happens to be placed on all box cars is due to his employees writing his name without raising the chalk.

You start with "S S ing," then bring the tail of the "g" up and around by the second "s," then flourish underneath the first "s," then make your loops for the "B," then circle around and make your "J," then you have J B. King.—W. A. PRITCHARD, Battle Creek, Michigan

J. B. King happens to work in the same yard with me in this town. He is an old-timer—a switchman at heart and a car hand for true. Of course the public does not know the meaning of "car hand," but all the old rails do.—R. L. T., Garfield, Utah

J B King is a myth so far as I know, but the name is written by William Hodson, a switchman for the G. R. and I R. R., who always has a piece of chalk in his hand nearly all the time and writes the name of J B. King backward. He does a good job. You may notice it is written backward, beginning with "g" and ending with "J."—M. L. BUTTS, Grand Rapids, Michigan

J. B. King is a brakeman on the S. P. L. A. and S. L. Railroad. He lives at Las Vegas, Nevada, or did about two years ago, at which time I worked with him on a work-train at Moapa, Nevada. Why I am sure this is the man is because I have watched him write his name on a great many cars.—E. W. WHITE, Tonopah, Nevada.

"Who is this man, this J. B. King,
Who writes his name on everything?"
This question I read in the RAILROAD MAN,
And so I will answer it—for I can

You remember a "fever" you had when a boy?
(For all boys have "fevers," you know)
Of writing your name in connected style
Without lifting your pencil; 'twas surely a trial,
You'd give up in disgust when you'd tried it a while,
For the letters and names wouldn't "go."

Now this name, "J. B. King," that you see on the cars,
Is easy to write in this way.
And so people write it wherever they can—
It's sort of a "fever" with each boy and man—
So with chalk it's inscribed by almost every hand
On the cars, which you see every day.
—MISS EDRIS STEVENTON, Terre Haute, Indiana.

ANSWER TO CERTAIN SIGNALS.

MISS J. ALICE FREEMAN, Newark, N. J.—In reply to your letter regarding "The Eighty-Mile Stretch," by Charles Wesley Sanders, I think that I can explain away your objection, if you will turn to page 360 of the March number, and read the third paragraph in the second column which begins, "There was still sleep in Bartlett's eyes, etc." The author very wisely did not deem it necessary to specify the time, and he further states, to make it clear, that "he had brought the train in on time, had been congratulated, and had gone home to sleep." This, it seems to me, makes the situation entirely lucid. It would only clog the action of the story to describe or even mention the fact that the engineer had gone home after his return.

KNOCKS AND BOOSTS.

EDITOR, RAILROAD MAN'S MAGAZINE:

I HAVE just read in "Knocks and Boosts" the letter from C. M. and C. J. J., Amelia, Louisiana. I wouldn't pay any attention to such talk as that. Those fellows don't know how to appreciate a good thing when they see it. Your stories are just as fine as they ever were, and the illustrated articles are more than interesting—they are very educating. It certainly makes me sore to think that any one would kick about the best magazine published. I would gladly pay three times the price asked for your magazine.—H. S., Fullerton, California.

I am very well pleased with your magazine and would pay double the price if I had to. I have been a reader of your magazine for three years and have never noticed anything that should be flagged.—H. S. B., Cedar Rapids, Iowa.

I have been a constant reader of your magazine for the past six years and have not missed a copy in that time.—E. C., Marquette, Michigan.

I notice a lack of poems. Are you cutting out the poetry, or are you without it? The poems you publish are rated as your best

literature by me As a constant reader, and as one who is intent on being a constant reader, I beseech you—give us more poetry! J. M T., Kansas City, Kansas.

Enclosed please find money-order for $1 50, for which please send me the RAILROAD MAN'S MAGAZINE for one year. I tried to get our newsdealer to order it for me, but it seems he can't I am compelled to have it, as it is the best magazine published.—G. D. L., Marietta, Ohio.

I have just finished reading the April number. I wish to swear truthfully that it is getting better every issue—W R., Pontiac, Michigan

I think that a large number of your readers ask useless questions. Some time ago some one asked, "What is the reverse-lever on engine for?" Now if the inquirer did not have enough brains to figure out that it is to change the direction in which an engine is going, any other finer details would not be much benefit to him, or it might have been—her

Now it's all right to sit on the fence and crow, but some of those fence riders never tried to do anything themselves, so do not know the difficulty of pleasing every one. Your magazine has been repeated and completed. The board is clear, the switch is set for the main line! "Let 'er go, Gallagher."—"HOGGER," Alberta, Canada

ADDRESSES WANTED.

INFORMATION is wanted regarding Buddy Bodling, a fireman, twenty-two years old, six feet four inches in height, and slender. He has light-brown hair and blue eyes. When last heard from he was working on a railroad out of Spokane, Washington This was about two and a half years ago Address MR. AND MRS. H M. BODLING, 300 East Sixteenth Street, Austin, Texas.

Information is wanted regarding William Collis, a brother of Tom, Granville, and John Collis, who are all dead William Collis worked on the Panhandle of the B and O Any information will be appreciated by his nephew, CHARLES C COLLIS, 50 North Pearl Street, Youngstown, Ohio.

Information is wanted regarding the whereabouts of Simon Johnson, who in 1907 was firing out of Eholt, B. C., on the C. P. R., and in December, 1908, was firing out of Whitefish, Montana His mother is very anxious to hear from him. Address all communications to J. A. JOHNSON, Engineer, C. P. R., Revelstoke, British Columbia

Information is wanted regarding the whereabouts of C F Pulcifer, a bridge-builder for some railroad company in Michigan He was last heard of in Hillsdale, Michigan Address ALBERT TOPELT, Doty, Washington.

Information is wanted of Leslie Black, last heard from in Huntly, Montana, where he was working on a railroad ditch. This was over five years ago. He is five feet two inches tall, medium, light, and twenty-three years of age. Address his sister, GRACE BLACK, 1634 East Fifty-Third Street, Chicago, Illinois.

Information is wanted regarding William Mead Swango, a switchman, who disappeared from his home on November 14 last Kindly address MRS KATIE SWANGO, McCrary, Arkansas

Information is wanted regarding the whereabouts of Fred T Hassloch, age thirty-three years, light complexion, slender build, weight 135 pounds. He was a brakeman on the Chicago, Milwaukee and St Paul out of Mendota, Illinois, in 1905, and later was agent for the Lake Shore at Seatonville, Illinois. The last time he was heard from was when he left Omaha, Nebraska, May 20, 1910, as a drummer with Cory Brothers Amusement Company Any one knowing his address will please notify his anxious wife, MRS NORAH HASSLOCH, care, HANS NINDELL, East Omaha, Nebraska

THE POETS' CORNER.

EDITOR, RAILROAD MAN'S MAGAZINE:

WOULD you please ask some of the old boys of 1894 to search their brain-box and see if they can dig up a little piece of poetry? It runs something like this:

I lost my job in the A. R. U.,
And I can't get back till 1902;
Been all over the Texas plains
Hit every supe and master of trains

This is all I can recall just now, but some of the old bumble bees may still know it.—R J H, San Diego, California

Do any of our readers know the complete words of the song, "When the Midnight Choo Choo Comes In?" If so, will they please send them to this department?

AIR-BRAKE AYRAM

TIME was on the Isthmus when every one raised
His hat to the hero whom every one praised.
Brave Ayram, the King of the Air, was his name,
And proud was the Zone of its engineer's fame
In "train line exhaust" or terminal test,
Of all engineers he was easily best;
The officials admitted 'twas sure, anywhere
They heard Ayram talking there was plenty of "air."

Such wonderful braking! The triples would pop
From under the coaches to see Ayram stop
At every way station was chalked a set place
Where the speed of his train must halt its mad pace.
Then down from his cab Mighty Ayram would drop
Tape-measure in hand to see if his stop
Had varied an inch, two inches, or more,
From the crack-a-jack stop he had made there before

Not a cow nor a calf that grazed by the road
Failed to respond when his steam whistle blowed,
For Ayram long since had made friends of them all
By saving their lives in a very close call,
When they wandered unheeding along by the rails,
And the hero just stopped at the tip of their tails

But at last came a change, the Despatcher on High,
Gave him orders to run, but not to pass by,
The Terminal Station with its huge golden gate
Where the Master Mechanic would receive him in state
But alas for poor Ayram! His brakes failed at last,
And into the region of flames he passed,
Where Satan with one fiery sweep of his pen
Made poor, luckless Ayram a fireman again.

—Panama *Morning Journal*

THE KISS IN THE TUNNEL.

THEY were sitting five seats back, but I plainly heard the smack,
As we dashed into the tunnel near the town,
And the currents of my veins ran like gushing April rains,
Though I'm grave and gray—and wear a doctor's gown

Once—alas, so long ago—on the rails I journeyed so,
With a maiden in a jaunty jersey sack,
And I kissed her with my eyes as the timid stars the skies,
But I longed—oh, how I longed!—for one real smack!

Did she know it? I dare say! (She'd a sweet clairvoyant way
In the glancing of her eyes so bright and blue)
Ne'er a bee such honey sips as the nectar on her lips;
But I longed and longed in vain, as on we flew

Just as yearning reached its height, lo! there came a sudden night,
And like steel to magnet clove my mouth to hers!
I shall never more forget how like drops of rain they met,
In the bosom of a rose that lightly stirs!

When we came again to light, both our faces had burned white—
White as clouds that float in summer from the south,
Missed I glances, missed I smiles, but on air I rode for miles
With the sweetness of love's dew upon my mouth

So the kiss that some one stole, in the rayless Stygian hole,
While with loud imprisoned clangor on we rushed,
Caused the sluggish streams of age, with young madness leap and rage—
And my wife, restored to daylight, laughed and blushed

HANDSOME DAN

Contributed by William A. Charles

YOU see that man, a passing there,
Mumbling to himself?
You'd think it must be twenty years
Since he was on the shelf

But let me tell you, stranger,
That man is young, not old,
For the sorrow that he's suffered
Can ne'er by word be told

When he was young and handsome,
Not more than twenty-eight,
He used to be the engineer
Who ran the local freight

He met a pretty maiden,
Her name was Madeline—
She was the fairest creature
That he had ever seen

She fell in love with handsome Dan,
But he was a careless sort;
He simply played with the poor girl's heart,
To him 'twas only sport

She worshiped him, this little girl,
But he just danced along,
And juggled with the poor girl's love,
Not thinking it was wrong

There came a day when she awoke,
And saw 'twas but a game;
It killed her smile and merry laugh—
She never was the same

And Dan just left the girl to grieve,
And didn't seem to mind;
Whene'er his friends would speak of her,
He'd say: "She's not my kind."

And so it went from month to month,
Until one fateful day
Poor broken-hearted Madeline
Just threw her life away.

And under Dan's big engine
Her sorrows all were ended,
They found her crushed and smiling,
For death her heart had mended

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Air-Brake Repairman	Assayer
Mechanical Engineer	Architect
Mechanical Draftsman	Bookkeeper
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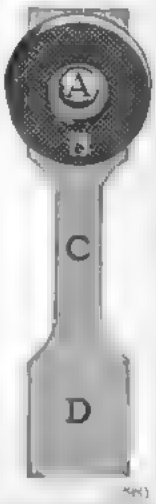

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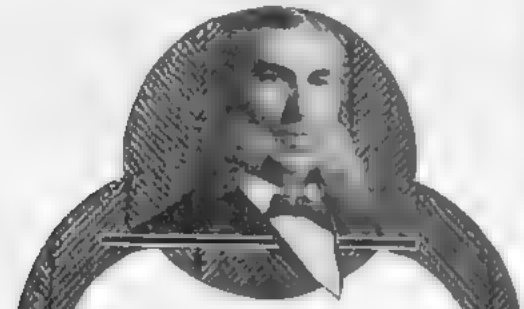

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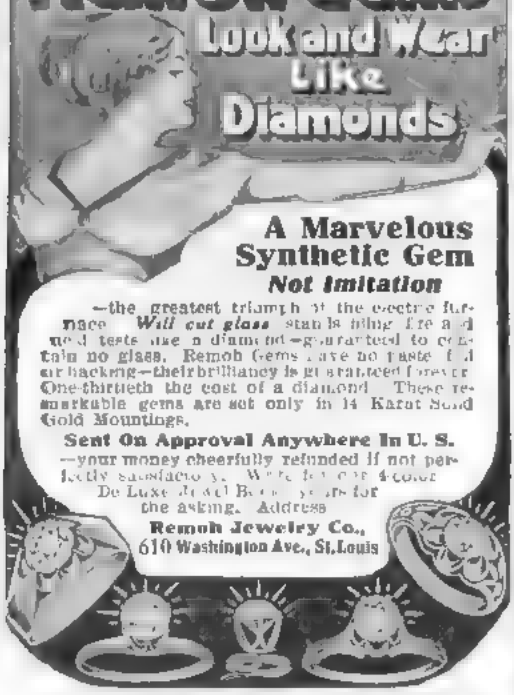

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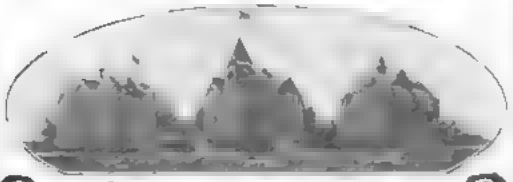

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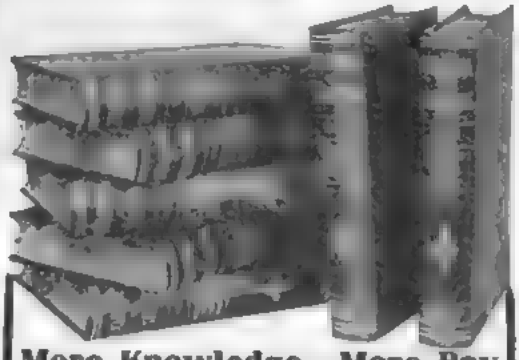

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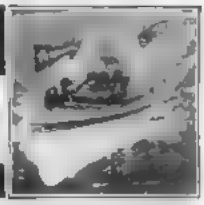

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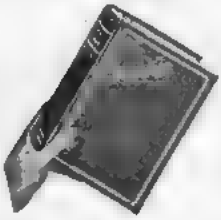

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14K SOLITAIRE RINGS Complete with one fine $37.00 Diamond
As illustrated $71.75
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With one fine $981.25 Diamond

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BASCH

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The Railroad and Current Mechanics Agents' Bureau

A Department of Opportunity Where the Manufacturer Meets the Men Who Sell His Goods

ADDRESS ALL INQUIRIES FOR RATES AND ENROLLMENTS TO THIS MAGAZINE, 175 FIFTH AVE., NEW YORK

A Little Talk to Agents

This is a new department in THE RAILROAD AND CURRENT MECHANICS. It is a department of immense value to reader and advertiser alike because it aims to establish a ready reference directory for the newest devices brought out by the specialty manufacturers of the country.

It has a further purpose however in bringing together the manufacturer and the agents on whom he must depend to distribute his product. Enrolled in THE RAILROAD AND CURRENT MECHANICS AGENTS' BUREAU are thousands of skilled agents, men and women trained in salesmanship and capable of handling anything, from a paper of pins to a piano.

In every town and every city of America are young men and young women who are natural born salesmen. Good positions of trust and confidence are open to them, once their selling ability is put to the test, and it is the plan of this department to put these men and women in touch with live progressive manufacturers, through the advertising columns of this magazine.

If you feel that you can sell goods, if you want to get in touch with some manufacturer who has something you can sell, write direct to the advertisers in this department or send your name and address to the Agents Bureau, where it will be tested and referred to manufacturers who are making use of these pages for the extension of their selling system.

$200 A MONTH
BE YOUR OWN BOSS

If you are making less than $50 a week you

How would you like

PAPER POST CARDS DIRECT

Every photo is developed WITH-OUT the use of films or negatives and is ready to deliver to your customer in less than 1 minute after making the exposure

NO EXPERIENCE NEEDED

WONDERFUL PR

Don't delay, answer this non-personal ad to-day

L. Laverlle Mfg., 627 W. 43d St., Dept. 1014 New York, U. S. A.

$12 A WEEK SALARY and 100% PROFIT

"Pomet" Metal Polishing Cloth

F. C. GALE CO. 252 Devonshire St. Boston, Mass.

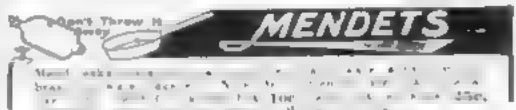
AGENTS wanted for this wonderful SELF HEATING IRON; over 2,500,000 sold; guaranteed and warranted; dandy seller. Catalog and new selling plan to bona fide agents. G. H. Schubert, Mfrs. Distr., Dept. , 34-36 S. Racine Street, Chicago.

Agents

Men and Women Money Makers

We want agents at every city where selling our imported embroidered voile and rajah robe dress patterns. We pay $10 a day and

JOS. GLUCK, Dept. 0, 624 Broadway, N. Y.



COLLETTI MFG. CO., Box 202, Amsterdam, N. Y.

AGENTS—A Set of Rogers A No. 1 Silverware

Splash Wat

N. E. Inc. Light Co., 262 Tremont St., Boston, Mass.

AGENTS WANTED 100% PROFIT

AUBURN SPECIALTIES CO., Dept. 159, Auburn, N. Y.

Agents sell rich looking imported 30x60 rug $1. Carter, Tenn., sold 115 in 4 days. Profit $57. You can do as well. Write for selling plan. Sample paid parcel post 18c.

V. CONDON, Importer, Stonington, Me.

You've seen him. He gets ... where he's ... nearly everything worth while, and is

Making Big Money
Making ONE MINUTE PHOTOS

This Man Makes $75 a Week

NATIONAL PHOTOGRAPH MACHINE CO.
Dept. 426, 85 Beaver St. New York City
Established 1899

In answering any advertisement on this page it is desirable that you mention RAILROAD MAN'S MAGAZINE

"Snap Shot" Money in Your Pocket

Big Cash Profits for You $5 to $20 a day in your own [illegible] are doing it. Read These Late Reports [illegible] "Made $27 in 2 hours. [illegible] made $16.00 in 6 hours. [illegible] Says "Made $15.75 last Tuesday. [illegible] "Made $50.00 in 2 days." [illegible] letters [illegible] Get one of the [illegible] Be a one minute photographer. New business—[illegible] the world [illegible] on the street [illegible] towns [illegible] No experience necessary; [illegible] and you MAKE 600% ON EVERY SALE. Don't delay—don't wait—WRITE AT ONCE for free information about

The "Mandel" Post Card Machine

New invention—wonderful machine that takes, finishes and delivers [illegible] in a minute. [illegible] RIGHT ON THE SPOT. Write Now! TAKE THEM! Wonderful new, photographic process—starts [illegible]

Photos Direct on Post Cards

Without Plates, Films, Printing or Dark Room

Machine is everything in one—**a complete, portable post card gallery.** Excites interest, arrests attention, compels immediate orders from [illegible]. SMALL CAPITAL STARTS YOU [illegible] to become independent for [illegible] If you are in need of [illegible] DO NOT DELAY—[illegible] mean business. We will show you how to get the money. Write now—at once. Information is FREE. Address either office

THE CHICAGO FERROTYPE CO. 643 Ferrotype BLDG., Congress & Laflin Sts., Chicago Dept. G 178 89-91 Delancey St., New York

IRON WITHOUT A FIRE

IMPROVED MONITOR SAD IRON

SELF HEATING. SAFE. ODORLESS. GUARANTEED

AGENTS, SALESMEN, MANAGERS WANTED $10 TO $20 A DAY

THE MONITOR SAD IRON CO.
243 WAYNE STREET, BIG PRAIRIE, OHIO

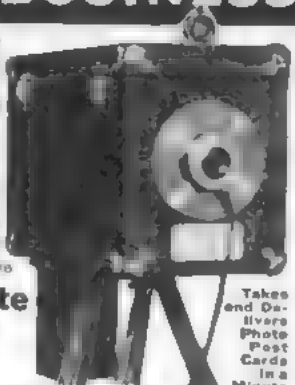
MONEY FOR YOU IN A NEW BUSINESS

Write us at once [illegible]

$50.00 a week [illegible]

No Experience Necessary

Everybody buys [illegible] Start right in the [illegible]



One Minute Camera

Takes and Delivers Photo Post Cards in a Minute

Press this button of profit

A Complete Portable Photo Studio

Snap the Bulb; Deliver the Picture, Collect your money All in a Minute!

Small Investment Make 300% Profit on Every Dollar [illegible]

Photos Made Direct on Post Cards
No Plates, Films or Dark Room

[illegible] WRITE AT ONCE FOR FULL PARTICULARS.

THE ONE MINUTE CAMERA CO. Dept 213 535-539 S. Clark St. Chicago

Made $30 First Day

CHAMPION Minute Photo Machine

[illegible] No experience is needed [illegible]

AMERICAN MINUTE PHOTO CO.
2914 Ogden Ave., Dept. E-556, Chicago, Illinois

In answering any advertisement on this page it is well to [illegible] MAN'S MAGAZINE

Get Your Canadian Home From the Canadian Pacific

W E will make you a long-time loan—you will have 20 years to pay for the land and repay the loan—you can move on the land at once—and your Canadian farm will *make you independent.*

20 Years to Pay

Rich Canadian land for from $11 to $30 per acre. You pay only one-twentieth down—balance in 19 equal annual payments. Long before your final payment comes due your farm will have paid for itself over and over. This advertisement is directed only to farmers or to men who will occupy or improve the land.

We Lend You $2000 For Improvements

The $2,000 loan is for improvements only—to help you erect your buildings, etc., and you are given twenty years in which to fully repay this loan. You pay only the banking interest of 6 per cent.

Advance of Live Stock on Loan Basis

The Company, in case of approved land purchaser who is in a position and has the knowledge to take care of his stock, will advance cattle, sheep and hogs up to the value of $1,000 on a loan basis, so as to enable the settler to get started from the first on the right basis of mixed farming. If you do not want to wait until you can complete your own buildings and cultivate your farm, select one of our Ready-Made farms—developed by C. P. R. Agricultural Experts—with buildings complete, land cultivated and in crop, and pay for it in 20 years. We give the valuable assistance of great demonstration farms—free.

This Great Offer Based on Good Land

Finest land on earth for grain growing, cattle, hog, sheep and horse raising, dairying, poultry, vegetables and general mixed farming, irrigated lands for intensive farming—non-irrigated lands with ample rainfall for mixed and grain farming. These lands are on or near established lines of railway, near established towns.

Ask for our handsome illustrated books on Manitoba, Saskatchewan and Alberta—mention the one you wish. Also maps with full information *free.* Write today.

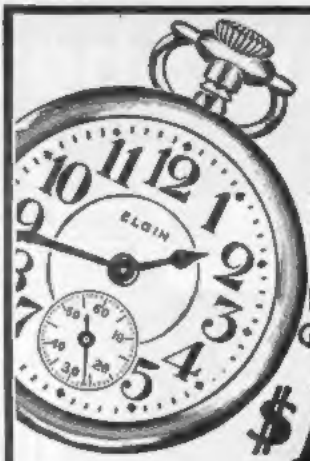
F. F. THORNTON, *Colonization Agent*

Canadian Pacific Railway

Colonization Department

112 W. Adams St., Chicago

FOR SALE—Town lots in all growing towns—Ask for information concerning Industrial and Business openings in all towns.



THIS 17 JEWEL ELGIN IN 25 YEAR GOLD CASE ONLY $12.75

30 DAYS FREE TRIAL

Now—during this Special Sale—is a splendid time to buy a fine Watch. We would like to send you this 17-Jewel Elgin in hand engraved 25-year gold case for your inspection. It sells regularly at $20.00. We save you nearly one half. If you answer this advertisement you can buy it for $12.75.

NO MONEY DOWN

We don't want you to send us one cent. Not a penny. Merely give us your name and address that we may send you this handsome Watch on approval. If after you receive it and want to keep it, then you pay us only

$2.00 A MONTH

If you don't want to keep it, send it back at our expense. You assume no risk whatever in dealing with us. You do not buy or pay a cent until we have placed the watch in your hands for your decision. We ask **NO SECURITY, NO INTEREST.** No red tape—just common honesty among men. If this offer appeals to you **WRITE TODAY** for

Our Big Free WATCH and DIAMOND BOOK!

HARRIS-GOAR CO.

Dept. 891 **KANSAS CITY, MO.**

THE HOUSE THAT SELLS MORE ELGIN WATCHES THAN ANY OTHER FIRM IN THE WORLD.

A REAL GEM. Full of Fire and Brilliancy. The most remarkable scientific discovery of the age; a dazzling, scintillating gem. Parisian Gems have the fiery beauty of genuine diamonds; will cut glass and retain their brilliancy; guaranteed for 20 years. Set only in genuine solid gold 14 k. mountings.

Sent on approval; see them before paying. Write for illustrated price list. PARISIAN GEM CO., Dept. K, 621 Broadway, New York.

DIAMONDS ON CREDIT

20% DOWN 10% MONTHLY

SAVE money on your diamonds by purchasing direct from us. Our new Catalogue explains our plan and contains illustrations of the latest novelties and designs of diamond jewelry. Send for Catalogue and compare our prices with those quoted by others. Our wonderful collection of diamonds, gathered by our experts abroad, enables you to obtain every advantage in price and quality. Guarantee certificate accompanies each diamond, and we allow the full amount to apply on exchanges.
Write today for Catalogue No. 2. **L. W. SWEET & CO., 2 & 4 Maiden Lane, New York.**

BJ

Don't Work in the Dark!

Danger lurks in dark places, and every railroader ought to carry a Baldwin lamp—especially fitted for engineers, trackmen, trainmen, baggage handlers, station agents, freight crews, etc.

It is the only clear white penetrating light adaptable to railroad use.

The Baldwin Camp Lamp

A compact, powerful light, 3½ inches high, weighs (charged) 6 ozs. Burns acetylene. Can be carried on cap, belt, or in hand, or stood upon table. Don't blow out—absolutely safe. No oil or dirt.

For sale by leading Hardware and Sporting Goods Dealers—sent prepaid on receipt of price.

Brass, $1.00; highly polished nickel with hinged handles, $1.50.

Send for Free Illustrated Booklet. Give name and address of your dealer.

JOHN SIMMONS CO.

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SUCCEED IN LIFE

You cannot accomplish great things nor climb to the top of the ladder of success unless your muscular development is given proper attention, because that is the only way the arteries, the nerves and the vital organs can keep the machinery of your body in working harmony. Educate yourself in deep breathing and attain great strength and vitality by reading the wonderful book, **"Intelligence in Physical Culture,"** written by **Lionel Strongfort**, the world's strongest and most perfect athlete. The Strongfort system of physical culture is a revelation in health culture and body building. The Secret of Success. My original methods are effective and when you write me you will always have my personal attention. Send 4c for postage and secure this book; it will start you toward health and happiness today.

LIONEL STRONGFORT

Dept. K, St. James Bldg., 1133 Bdy., NEW YORK

Strictly Modern Homes

A Book of Plans You Should See Before Building.

My new 1913 Catalog contains 40 choice designs in Bungalows, one-and-one-half and two story houses in frame, brick veneer, cement stucco and other styles of the latest in architecture. With each exterior design is shown the floor plans with full dimensions, descriptions and estimated cost. Also interior views and useful information.

Price 50 Cents Prepaid. Remember every design in this catalog is strictly modern, nothing old-fashioned.

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Just your name and address on coupon below brings you the new 1913 edition of our famous Camp Guide, absolutely free. The most practical book on camp life ever written. Gives you **practical** information written by experienced men who have spent years in camps in every part of the country. **This camp guide tells you everything you need to know about camping**—it tells you how to camp successfully and enjoyably—gives you the information that you could not **possibly** secure otherwise except by actual and often disagreeable experience.

Get Ready NOW for Your VACATION!

The time for planning is growing short. **Go camping.** You cannot find a more healthful or enjoyable way of using the time at your disposal.

But when you do go—go right! Send for our new Camp Guide and Catalog the first thing you do. You will find listed and described the largest line of Tents, Campers' Supplies, Sails and Canvas Specialties carried by any manufacturer in the United States. **We sell direct from our huge factories to you.** You are sure of getting the **very highest qualities** it is possible to obtain **at less** than you would have to pay at retail for decidedly inferior goods.

Look at these Wonderful Values

This 7x7 ft. Wall Tent, made of the very best quality 8-oz. Single Filling Duck, cut and made with the most extreme care.

A simply astounding bargain, only $5.90

Family Compartment Tent, 9x16½ feet. Made of the best selected quality of 10-oz. Double Filling Duck. May be divided into rooms for eating and sleeping to suit convenience. Insures absolute privacy. The ideal tent for family or small party. **Specially priced at $26.25**

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Gentlemen:—Kindly forward me free, postpaid, your new 1913 Catalogue and Camp Guide.

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BK

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"Inlay Enamel" Watches

Here is one of the exquisite new "inlay enamel" cases that you may get on this great special offer. Your own initials handsomely inlayed in any colors of enamel you select.

The latest idea in watch cases. Superbly beautiful. Your own monogram in handsome enamel design, (many designs to choose from) inlaid in the superb gold strata case. The newest thing—just conceived and offered *direct* to you.

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The masterpiece of the world's watch manufacture—the watch that keeps time to the second. A perfect timepiece for the discriminating buyer who wants the **best** at a fair price.

Your Choice of Scores of Cases

Open face or hunting cases, ladies' or men's sizes. These can be had in the newest ideas:

Block and Ribbon Monograms	***French Art Designs***
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Here is another superb "inlay enamel" case. Only one of the dozens you have to choose from. Scores of other handsome designs—all shipped to you on this great special offer.

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You may get the superb Burlington Special at the rock-bottom price—**the same price that even the WHOLESALE jeweler must pay.** You may secure one of these superb timepieces—a watch of the very latest model, the popular, new, thin design, adjusted to the second, positions, temperature and isochronism—19 jewels—at the rock-bottom price—**the same price that even the wholesaler must pay.**

$2.50 a Month at the Rock-Bottom Price

$2.50 a month for the world's most superb timepiece? The easiest payments at the rock-bottom price—the **Rock-Bottom** price. *To assure us that everybody will quickly accept this introductory direct offer, we will allow cash or easy payments, just as you prefer.*

No Money Down

We will ship this watch on approval, prepaid (your choice of ladies' or gentlemen's open face or hunting case). You risk absolutely nothing. You pay nothing—not a cent unless you **want** the great offer after seeing and thoroughly inspecting the watch. Send for our great offer today.

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Send for the free book. It will tell the inside facts about watch prices, and explains the many superior points of the Burlington over double-priced products. Absolutely no obligations of any kind in getting the catalog. It's free to you, so write at once. Just send the free coupon or a letter or a postal.

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PREMO

Light, compact, easy to load and thoroughly reliable, a Premo camera is a fitting companion for every ramble afield, every outdoor excursion.

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